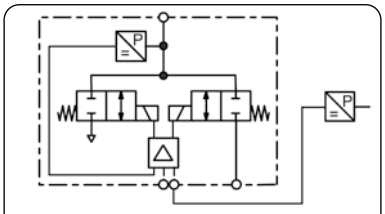
PROPORTIONAL PRESSURE REGULATORS

PRINCIPLE	DESCRIPTION	ACCURACY max.	PRESSURE RANGE bar	CONNECTION	SERIES	SEITE
CONTROL VALVE	on PCB	± 0.2 %	0 ... 0.005 / 10	G⅛	PM	**10.02**
high accuracy	falling characteristic	± 0.2 %	0 ... 0.005 / 35	G⅛	PQ1	**10.04**
	with double loop	± 0.2 %	0 ... 0.005 / 35	G⅛	PQ2	**10.05**
	up to 2000 l/min	± 0.25 %	0 ... 0.1 / 35	¼″NPT - ¾″NPT	PQ3...PQ6	**10.07**
PROPORT. MAGNET	proven, many options	± 0.5 %	0 ... 0.1 / 1	G⅛ - G1	PR	**10.09**
very robust	for flow applications	± 0.5 %	0 ... 6 / 50	G⅜	PF	**10.12**
	digital control, also SST	± 0.5 %	0 ... 0.1 / 50	G⅛ - G1	PP	**10.17**
	programmable	± 0.5 %	0 ... 1 / 12	G⅛ - G⅜	PD	**10.19**
WITHOUT ELECTRIC	PWM-controlled	< 1%	0 ... 6 / 16	G¼ - G1	PG	**10.13**
FLAPPER/NOZZLE	integrated booster, Atex	± 0.5 %	0.2 ... 1 / 8	¼″NPT	PT6	**10.24**
highly sensitive						
PIEZO-OPERATED	high accurate, Atex	± 0.25 %	0.2 ... 1 / 8	¼″NPT	PT7	**10.25**
very fast	minimal power consumption	± 0.2 %	0 ... 0.2 / 16	G⅛ a. G¼	PRE	**10.15**
MOTORISED REGUL.	failfreeze	± 1 %	0.14 ... 1.8 / 8	¼″NPT	P180	**10.27**
HIGH PRESSURE	proportional magnet	± 0.5 %	0 ... 30 / 50	G¼	PP0	**10.17**
	control valves	± 0.5 %	0 ... 40 / 70	G⅛	PQH	**10.21**
	proportional magnet	± 3 %	0 ... 30 / 80	G¼	PHP	**10.23**
ATEX	control valves	± 1 %	0 ... 2 / 6	G⅛	PCEX	**10.20**
	flapper nozzle	± 0.5 %	0.2 ... 1 / 8	¼″NPT	PT6	**10.24**
	piezo-operated	± 0.25 %	0.2 ... 1 / 8	¼″NPT	PT7	**10.25**
VACUUM	on PCB	± 0.2 %	-1 ... 0 / + 1	G⅛	PM	**10.02**
	control valves	± 0.2 %	-1 ... 0 / + 1	G⅛	PQ1	**10.04**
	with double loop	± 0.2 %	-1 ... 0 / + 1	G⅛	PQ2	**10.05**
	proportional magnet	± 0.5 %	-1 ... 0 / + 1	G⅛ - G1	PR	**10.09**
	piezo-operated	± 0.2 %	-1 ... 1 / +10	G⅛ a. G¼	PRE	**10.15**
	digital control	± 0.5 %	-1 ... 0	G⅛ - G1	PP	**10.17**
IO-LINK	digital control	± 1.5 %	0 ... 3 / 10	G¼- G½	PIO	**10.26**
SETPOINT	with 10-speed-potentiometer				PPB	**10.28**
BOOSTER/PROP.-VENTIL-KOMB.	normal loop				BP1	**10.30**
	with double loop				BP2	**10.31**

10

PROPORTIONAL PRESSURE REGULATOR ON PCB, ACCURATE TO 0.2% PM

Description	Proportional pressure regulator with closed loop control technology for better control of pressurised gases. The instrument can be built as single closed loop or dual closed loop control valve.		
Media	dry, lubricated or unlubricated and 5 µm filtered compressed air or non-corrosive gases		
Fail freeze	constant outlet pressure at voltage drop		
Second loop	0…10 V, impedance 4.7 kΩ,	ratio of internal to external relationship is 10% to 90%	
Supply voltage	15…24 V DC, residual ripple < 10%, with reverse voltage protection		
Impedance	0…10 V / 4.7 kΩ, 4…20 mA / 100 Ω,	jumper selectable command	
Monitor signal	0…10 V at max. 10 mA		
Electrical connection	terminal strip for 2.5 mm²		
Power consumption	3.6 W regulating, 0.5 W non-regulating	**Air consumption**	without constant bleed
Linearity / Hysteresis	< 0.15% FS	**Repeatability**	< 0.02 FS
Temperature influence	< 1% FS at 0 °C to 50 °C / 32 °F to 122 °F	**Adjustment**	zero point and span
Temperature range	0 °C to 70 °C / 32 °F to 158 °F	**Mounting position**	any, vibration-resistant
Material	Ports: brass	Elastomer:	FKM
	Transducer: aluminium and silicon	Valves:	nickel-plated brass



with single or double loop

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. mbar/bar	Accuracy %	Connection thread G	Pressure range mbar/bar	Order number	E*
Proportional press. regulator 0-10 V input and monitor signal, supply voltage 24 V DC, fail freeze, single loop for DIN rail								**PM**	
56	78	54	35	10 mbar	0.2	G⅛	0… 5 mbar	**PM1DE-A5**	
				20 mbar			0… 10 mbar	**PM1DE-B1**	
				200 mbar			0…100 mbar	**PM1DE-C1**	
				1000 mbar			0…600 mbar	**PM1DE-C6**	
56	78	54	35	2 bar	0.2	G⅛	0… 1 bar	**PM1DE-01**	
				3 bar			0… 2 bar	**PM1DE-02**	
				9 bar			0… 4 bar	**PM1DE-04**	
				9 bar			0… 6 bar	**PM1DE-06**	
				15 bar			0… 10 bar	**PM1DE-10**	
56	78	54	35	2 bar	0.2	G⅛	0… -1 bar	**PM1DE-V0**	
				2 bar			-1… +1 bar	**PM1DE-V1**	

PM . D
DIN rail mounting

PM . P
panel mounting

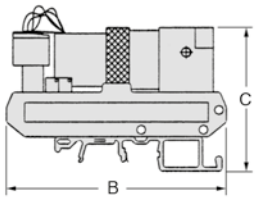
PM . M
mounting on manifold block

Special options, add the appropriate letter

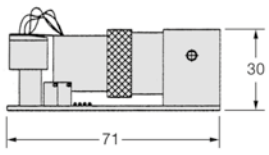
double loop	second loop feedback 0 ...10 V	PM**2** . . - . .
4-20 mA	supply signal, jumper selectable command	PM . . **I** - . .
flow 100 l/min	increased flow rate	PM . . . - . . **HF**
panel mounting	on plane level	PM . **P** . - . .
mounting for manifolds	connections downwards	PM . **M** . - . .

Accessories, enclosed

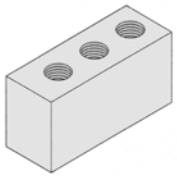
manifold block	for 2 to 7 valves	number of valves added to order number	**SBM- .**



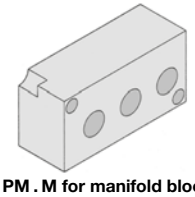
PM . D for DIN rail



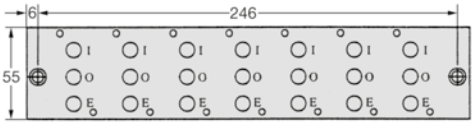
PM . P for panel mounting

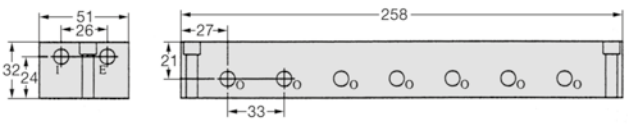


PM . D for DIN rail

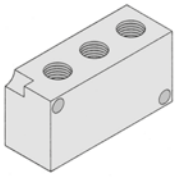


PM . M for manifold block

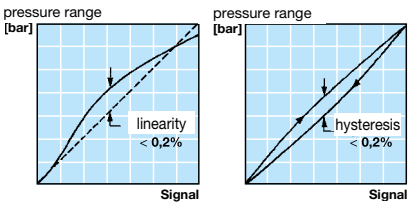




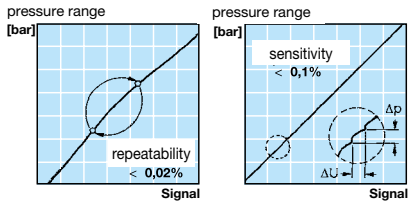
manifold block for 2 to 7 valves



PM . P for panel mounting



linearity **hysteresis**



repeatability **sensitivity**

*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
*2 higher supply pressures on request

* Product group

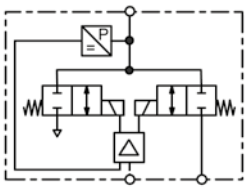
For further details about double loop see PQ2

PDF CAD
www.aircom.net

Order example: PM1DE-A5

Technical features

• **Pressure range**	0 … 10 mbar up to 0 … 35 bar	• **Linearity**	± 0.15% FS
• **Input signal**	0 … 10 V and 4 … 20 mA	• **Hysteresis**	± 0.15% FS
• **Security**	constant outlet pressure at voltage drop	• **Response sensitivity**	< 0.1% FS
• **Response time**	10 to 15 ms	• **Repeatability**	± 0.02% FS
• **Adjustment**	zero point and span	• **Protection class**	IP 65
• **Sensitivity**	immune to shock and vibration up to 25 g	• **Air consumption**	without constant bleed



accurate to 0.2%

General technical features

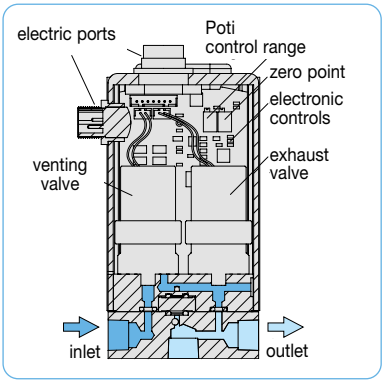
Description Two solenoid valves control the system pressure. One valve is for inlet control, the other for outlet control. A strain gauge pressure transducer measures system pressure and provides a feedback signal to the electronic controls. Any difference between command and feedback signals causes one of the solenoid valves to open, causing system pressure to increase or decrease.

Mounting position any, immune to shock and vibration up to 25 g

Protection class IP 65 housing

Temperature range -5 °C to 70 °C / 23 °F to 158 °F

Material Body: aluminium Elastomer: FKM
Transducer: aluminium and silicon Valves: nickel-plated brass



cross-section PQ

Pneumatic features

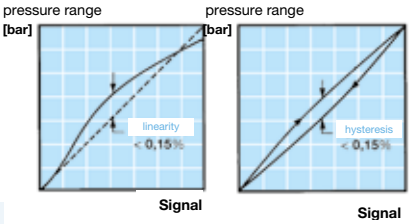
Media dry, unlubricated and 5 µm filtered compressed air or non-corrosive gases

Supply pressure see chart, minimum 10% above outlet pressure

Flow rate 35 l/min at 7 bar supply pressure and open outlet, optionally 100 l/min
3 l/min at controlled outlet pressure

Exhaust same nominal size as on inlet valve, thus same relief capacity

Air consumption without constant bleed, Option X58: < 2 l/min



linearity **hysteresis**

Electrical features

Supply voltage 15 … 24 V DC, reverse voltage protection existing

Power consumption 3.6 W for regulation, 0.5 W non-regulating

Signal range 0 … 10 V, optionally 4 … 20 mA

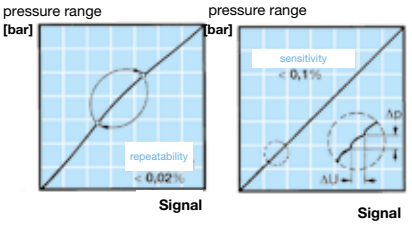
Impedance 4.7 kΩ at voltage signal, 100 Ω at current signal
10 kΩ at voltage signal, 100 Ω at current signal, for external feedback

Monitor signal impedance > 4.7 kΩ at voltage signal, <100 Ω at current signal

Electrical connector plug M16 x 0.75, 7-pin, with coupling socket

Monitor signal 0 … 10 V, optionally 4 … 20 mA

Security constant outlet pressure at voltage drop



repeatability **sensitivity**

Accuracy

Linearity/Hysteresis ± 0.15% FS

Response sensitivity < 0.1% FS

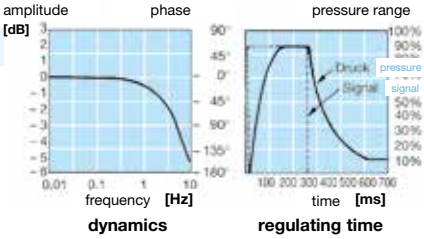
Response time 10 to 15 ms

Repeatability ± 0.02% FS

Temperature influence < 0.01% FS per °C/K at 0 °C to 50 °C / 32 °F to 122 °F
< 1.00% FS per °C/K at 50 °C to 70 °C / 122 °F to 158 °F

Accuracy over all ± 0.2 % FS

Regulating time < 2 s to fill 0.1 l volume to 90% of the initial pressure (or to exhaust)
< 40 s to fill 2 l volume to 90% of the initial pressure (< 80 s to exhaust)

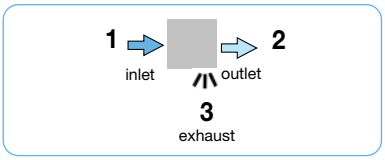


dynamics **regulating time**

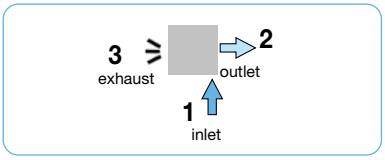
Adjustment

Zero point The zero point can be increased by up to 20% of full scale, e.g. from 0 bar to 1.2 bar at a 6 bar regulator. External adjustment via potentiometer Z "zero".

Span The maximum pressure value of the control range can be reduced by up to 20% depending on the selected pressure range, e.g. from 6 to 4.8 bar. External adjustment via potentiometer S "span".



standard



execution "HF"

*1 at 7 bar supply pressure and 3 bar outlet pressure

PDF CAD
www.aircom.net

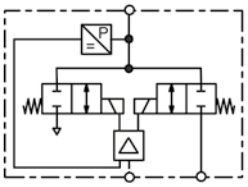
PROPORTIONAL PRESSURE REGULATOR WITH SINGLE LOOP, ACCURATE TO 0.2% PQ1

Description The pneumatic proportional pressure regulator produces outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system consisting of valves, manifold, housing and electronic controls.

Single loop Pressure is controlled by two solenoid valves. One valve functions as inlet control, the other as exhaust. The pressure outlet is measured by an internal pressure transducer which provides a feedback signal to the electronic controls. This feedback signal is compared with the command input signal. Any difference between the two signals causes one of the two solenoid valves to open, allowing flow into or out of the system. Accurate pressure is maintained by these two valves.

Accuracy

Linearity / Hysteresis:	± 0.15% FS
Response sensitivity:	< 0.1% FS
Repeatability:	± 0.02% FS
Accuracy over all:	± 0.2% FS



G⅛
0 … 10 mbar/35 bar

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. mbar/bar*2	Accuracy %	Connection thread G	Pressure range mbar/bar	Order number	E*
Single loop regulator				0 … 10 V input and feedback signal, supply voltage 24 V DC, 35 l/min*1, with coupling socket				**PQ1**	
51	106	8	on request	300 mbar	0.2	G⅛	0 … 5 mbar	**PQ1EE-A5**	
				300 mbar			0 … 10 mbar	**PQ1EE-B1**	
				300 mbar			0 … 20 mbar	**PQ1EE-B2**	
				300 mbar			0 … 50 mbar	**PQ1EE-B5**	
				300 mbar			0 … 100 mbar	**PQ1EE-C1**	
				400 mbar			0 … 200 mbar	**PQ1EE-C2**	
				800 mbar			0 … 400 mbar	**PQ1EE-C4**	
				1000 mbar			0 … 600 mbar	**PQ1EE-C6**	
51	106	8	35	2 bar	0.2	G⅛	0 … 1 bar	**PQ1EE-01**	
				3 bar			0 … 2 bar	**PQ1EE-02**	
				7 bar			0 … 4 bar	**PQ1EE-04**	
				7 bar			0 … 6 bar	**PQ1EE-06**	
				9 bar			0 … 8 bar	**PQ1EE-08**	
				15 bar			0 … 10 bar	**PQ1EE-10**	
				15 bar			0 … 12 bar	**PQ1EE-12**	
				24 bar			0 … 16 bar	**PQ1EE-16**	
				24 bar			0 … 20 bar	**PQ1EE-20**	
				38 bar			0 … 25 bar	**PQ1EE-25**	
				38 bar			0 … 30 bar	**PQ1EE-30**	
				38 bar			0 … 35 bar	**PQ1EE-35**	
51	106	8	35	0 bar	0.2	G⅛	0 … -1 bar	**PQ1EE-V0**	
				2 bar			-1 … +1 bar	**PQ1EE-V1**	

PQ1

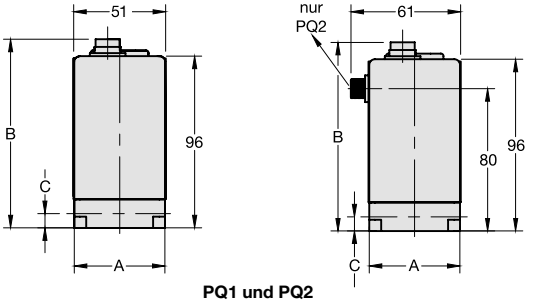
Special options, add the appropriate letter or number

4-20 mA	input and monitor signal	PQ1 **IC**- . .
increased volume flow	on request, max. 10 bar, not combinable with Opt. ..X58	PQ1 . . - . .**HF**
continuous regulation*3	improved characteristic curve through proportional inlet valve, max. 10 bar	PQ1 . . - . .**X58**
declining curve	inverted outlet	PQ1 . . - . .**X59**

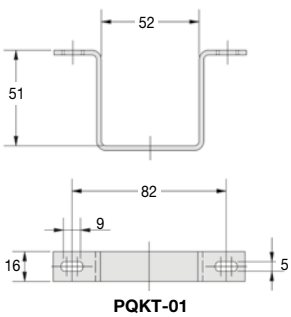
Accessories, enclosed

coupling socket	M16 x 0,75, 7-pin with 2 m cable	straight	**PRK-A2L**
		angular	**PRK-C2L**
mounting bracket	made of steel		**PQKT-01**

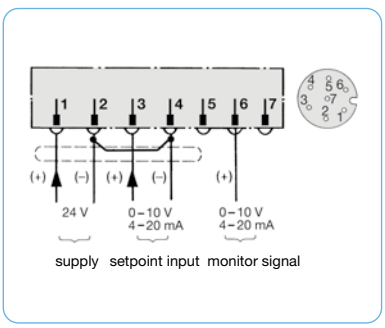
PRK-A **PRK-C**



PQ1 und PQ2



PQKT-01



connection diagram for supply and signal

*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
*2 higher supply pressure on request
*3 air consumption

* Product group

Technical details: see previous page

PDF CAD
www.aircom.net

Order example: PQ1EE-A5

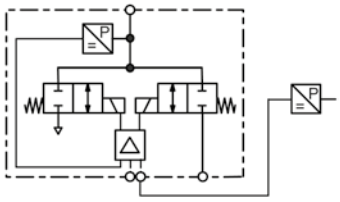
PROPORTIONAL PRESSURE REGULATOR WITH DOUBLE LOOP, ACCURATE TO 0.2% PQ2

Description The pneumatic proportional pressure regulator produces outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system consisting of valves, manifold, housing and electronic controls.

Double loop The servo valve expands in single loop operation by combining an additional feedback from an external sensing device with the internal transducer. The external sensor provides information on the control status. The PQ2 then compares the command signal with the second loop feedback signal.

Should there be a difference in the signal comparisons, the servo valve will make adjustments to the internal loop to bring the system into balance. This provides accurate final outlet. The acceptance of electrical feedback from an external sensor enables precise control of conditions such as pressure, force, torque, position or flow.

External pressure transducer Any pressure transducer for 0-10 V and 4-20 mA output signal and suitable for 15-24V DC supply voltage can be applied. An appropriate coupling socket plus cable is required.



G⅛
0…10 mbar/35 bar

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. mbar/bar*2	Accuracy %	Connection thread G	Pressure range mbar/bar	Order number	E*
Double loop regulator				0 … 10 V input / feedback / second loop signal, supply voltage 24 V DC, 35 l/min*1, with both coupling sockets				**PQ2**	
51	106	8	on request	300 mbar	0.2	G⅛	0… 5 mbar	**PQ2EE-A5**	
				300 mbar			0… 10 mbar	**PQ2EE-B1**	
				300 mbar			0… 20 mbar	**PQ2EE-B2**	
				300 mbar			0… 50 mbar	**PQ2EE-B5**	
				300 mbar			0…100 mbar	**PQ2EE-C1**	
				400 mbar			0…200 mbar	**PQ2EE-C2**	
				800 mbar			0…400 mbar	**PQ2EE-C4**	
				1000 mbar			0…600 mbar	**PQ2EE-C6**	
51	106	8	35	2 bar	0.2	G⅛	0… 1 bar	**PQ2EE-01**	
				3 bar			0… 2 bar	**PQ2EE-02**	
				7 bar			0… 4 bar	**PQ2EE-04**	
				7 bar			0… 6 bar	**PQ2EE-06**	
				9 bar			0… 8 bar	**PQ2EE-08**	
				15 bar			0… 10 bar	**PQ2EE-10**	
				15 bar			0… 12 bar	**PQ2EE-12**	
				24 bar			0… 16 bar	**PQ2EE-16**	
				24 bar			0… 20 bar	**PQ2EE-20**	
				38 bar			0… 25 bar	**PQ2EE-25**	
				38 bar			0… 30 bar	**PQ2EE-30**	
				38 bar			0… 35 bar	**PQ2EE-35**	
51	106	8	35	0 bar	0.2	G⅛	0… -1 bar	**PQ2EE-V0**	
				2 bar			-1… +1 bar	**PQ2EE-V1**	

PQ2

combination example:
booster with proportional pressure regulator and second loop via pressure transducer

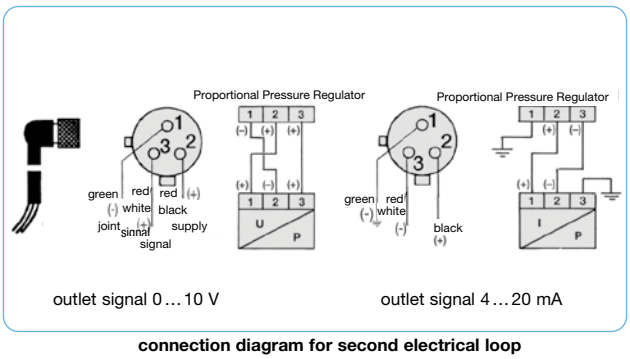
Special options, add the appropriate letter or number

4-20 mA	input / feedback / second loop signal	PQ2 **IC**- . .
increased volume flow	on request max. 10 bar, cannot be combined with opt. ..X58	PQ2 . . - . . **HF**
continuous regulation*3	improved characteristic curve through proportional inlet valve, max. 10 bar	PQ2 . . - . . **X58**
declining curve	inverted outlet	PQ2 . . - . . **X59**

Accessories, enclosed

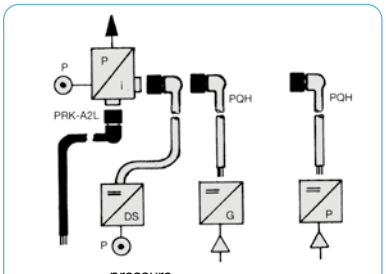
coupling socket	M16 x 0.75,	7-pin with 2.0 m cable,	supply and signal,	straight	**PRK-A2L**
				angular	**PRK-C2L**
coupling socket	½″ UNF,	3-pin with 0.9 m cable,	for second loop,	angular	**PQH-L1**
	½″ UNF,	3-pin with 1.8 m cable,	for second loop,	angular	**PQH-L2**
mounting bracket	made of steel				**PQKT-01**

PRK-A **PRK-C**



outlet signal 0…10 V outlet signal 4…20 mA

connection diagram for second electrical loop



PQ2 with second loop

*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
*2 higher supply pressures on request
*3 air consumption

* Product group

Technical details: see previous page

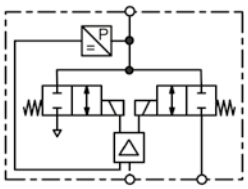
PDF CAD
www.aircom.net

Order example: PQ2EE-A5

PROPORTIONAL PRESSURE REGULATOR WITH HIGH ACCURACY AND HIGH FLOW PQ3…PQ6

Technical features

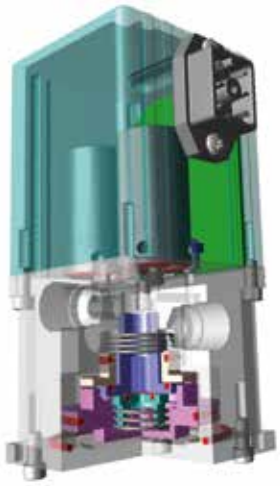
• **Pressure range**	-1... 35 bar	• **Accuracy**	± 0.4 %
• **Input signal**	0-10 V; 4-20 mA	• **Mounting position**	any
• **Protection class**	IP65	• **Adjustment**	zero point, span, hysteresis
• **Response time**	15 ... 20 ms	• **Air consumption**	without air consumption
• **Power consumption**	6 W		



accurate 0.4 %

General technical features

Description	Two solenoid valves control the system pressure. One valve is for inlet control, the other for outlet control. In order to achieve high volume flow the regulator is pilot-controlled, i.e. the valves control an integral volume booster. Extraordinary accuracy is reached by measuring the outlet pressure of the booster and feeding back the according signal.
Mounting position	any, preferably upright
Protection class	IP65
Temperature range	0 °C to 70 °C / 32 °F to 158 °F
Material	Booster body: nickel-plated aluminium; Elastomer: FKM, NBR/Buna-N Transducer: aluminium and silicon; Valves: nickel-plated brass

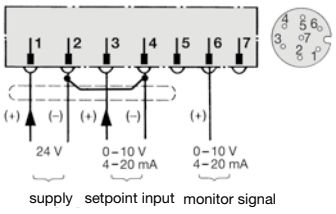


Pneumatic features

Media	dry, unlubricated and 40 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, minimum 10% above outlet pressure
Flow rate	**PQ3**: 700 l/min at 8 bar supply pressure and 6 bar outlet pressure **PQ4 / PQ6**: 2000 l/min at 8 bar supply pressure and 6 bar outlet pressure
Exhaust	nearly same relief capacity as ventilation capacity
Air consumption	without constant bleed

Electrical features

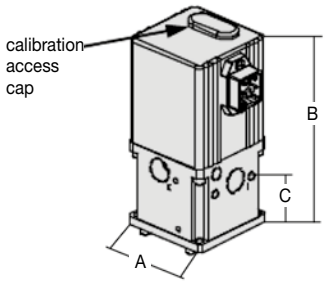
Supply voltage	15-24 V DC
Power consumption	max. 6 W
Command signal	0-10 V, optionally 4-20 mA
Command signal impedance	10 kΩ at voltage signal, 100 Ω at current signal
Electrical connector	plug M16x0.75, 7-pin, with coupling socket
Monitor signal	0-10 V, optionally 4-20 mA
Security	constant outlet pressure at voltage drop



connection diagram for supply and signal

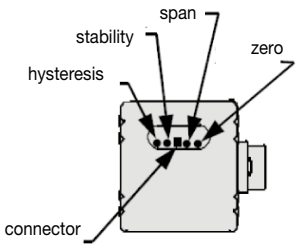
Accuracy

Linearity / Hysteresis	± 0.3% FS > 7 bar outlet pressure ± 0,5% FS
Response sensitivity	< 0.1% FS
Response time	10…15 ms
Repeatability	± 0.2% FS
Accuracy	± 0.4% FS



Adjustment

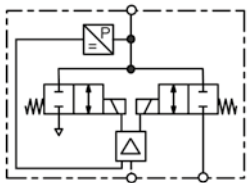
Adjustment	Adjustment by calibration access cap on the top of the valve.
Zero point	The zero point can be changed by up to 10% of full scale, e.g. from 0 bar to 0.6 bar at a 6 bar regulator. External adjustment via potentiometer Z "zero".
Span	The maximum pressure value of the control range can be reduced by up to 10%, e.g. from 6 bar to 5.4 bar. External adjustment via potentiometer S "span".
Hysteresis	Response sensitivity can be adjusted via potentiometer H “hysteresis”.



PROPORTIONAL PRESSURE REGULATOR WITH HIGH ACCURACY AND HIGH FLOW PQ3…PQ6

Description Closed loop electronic pressure regulator consisting of two solenoid valves, an internal pressure transducer, and an electronic control circuit mounted to an integral volume booster. The pressure is controlled by activating the solenoid valves, which apply pressure to the pilot side of the volume booster.

Single loop Pressure is controlled by two solenoid valves. One valve functions as inlet control, the other as exhaust. The pressure outlet is measured by an internal pressure transducer which provides a feedback signal to the electronic controls. This feedback signal is compared with the command input signal. Any difference between the two signals causes one of the two solenoid valves to open, allowing flow into or out of the system. Accurate pressure is maintained by these two valves.



0...0.1 bar/35 bar

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. bar	Accuracy %	Connection thread G/NPT	Pressure range bar	Order number	E*
Single loop regulator				0 ... 10 V input and feedback signal supply voltage 24 V DC, with coupling socket				**PQ3/PQ4/PQ6**	
51	123	34	700	1	0,25	¼″ NPT	0…0,1	**PQ3EE-C1**	
				1			0…0,5	**PQ3EE-C5**	
				2			0…1,0	**PQ3EE-01**	
				3			0…2,0	**PQ3EE-02**	
				7			0…4,0	**PQ3EE-04**	
				7			0…6,0	**PQ3EE-06**	
				9			0…8,0	**PQ3EE-08**	
				15			0… 10	**PQ3EE-10**	
				15		⅜″ NPT	0… 12	**PQ3EE-12**	
				24			0… 16	**PQ3EE-16**	
				24			0… 20	**PQ3EE-20**	
				38			0… 25	**PQ3EE-25**	
				38			0… 30	**PQ3EE-30**	
				38			0… 35	**PQ3EE-35**	
77	175	65	2000	1	0,4	½″ NPT	0…0,1	**PQ4EE-C1**	
				1			0…0,5	**PQ4EE-C5**	
				2			0…1,0	**PQ4EE-01**	
				3			0…2,0	**PQ4EE-02**	
				7			0…4,0	**PQ4EE-04**	
				7			0…6,0	**PQ4EE-06**	
				9			0…8,0	**PQ4EE-08**	
				15			0… 10	**PQ4EE-10**	
77	175	65	2000	1	0,4	¾″ NPT	0…0,1	**PQ6EE-C1**	
				1			0…0,5	**PQ6EE-C5**	
				2			0…1,0	**PQ6EE-01**	
				3			0…2,0	**PQ6EE-02**	
				7			0…4,0	**PQ6EE-04**	
				7			0…6,0	**PQ6EE-06**	
				9			0…8,0	**PQ6EE-08**	
				15			0… 10	**PQ6EE-10**	

PQ3EE-10

PQ4EE-10

Special options, add the appropriate letter

4-20 mA	input and monitor signal	PQ . I**C**- . .

Accessories, enclosed

coupling socket	M16x0.75, 7-pin with 2 m cable	straight	**PRK-A2L**
		angular	**PRK-C2L**
mounting bracket	made of steel	for PQ3	**PQKT-01**
mounting bracket	made of steel	for PQ4/PQ6	**PQKT-02**

PRK-A **PRK-C**

*1 at 8 bar inlet pressure and 6 bar outlet pressure

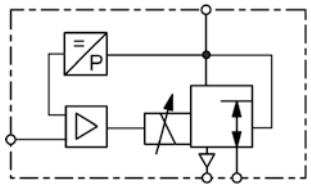
* Product group

Technical details: see previous page

PDF CAD
www.aircom.net

Order example: PQ3EE-C1

Description	The pneumatic proportional pressure regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact monoblock assembly with proportional solenoid valve, electronic regulator and internal pressure transducer. In the process, the outlet pressure is transformed into a proportional electrical signal and compared with the input signal. If the outlet pressure exceeds the preset setpoint, the valve exhausts down to the pressure desired. The valve has no constant bleed. At absence of input signal or supply voltage the valve exhausts. The power supply of the setpoint potentiometer is provided by the proportional regulator via connector pin number 5.
Pressure transducer	Open transducers: 100 mbar, 500 mbar, 1/5/10/16/20/30/50 bar and vacuum
Application examples	Proportional pressure regulators are being used for blowing machines, ultrasonic equipments, testing machines, painting systems, contouring systems, laser welding machines, textile machines, cheese presses, pneumatic brakes, clamping devices and medical engineering.



G⅛ up to G1

General technical features

Description	3-port/2-way pressure regulator with proportional magnet, integrated hybrid PCB and closed loop with pressure transducer in compact monoblock assembly.
Mounting position	any, preferably upright
Protection class	IP 54 with standard connector, IP 65 with special connector
Shock resistance	3G
Temperature range	0 °C up to 50 °C / 32 °F to 122 °F, high temperature version on request
Material	Body: brass (G⅛) and aluminium (G¼, G½ u. G1) Inner valve: brass and SST Seals: NBR/Buna-N, on request EPDM or FKM FKM for 50 bar version

Pneumatic features

Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, min. 10% above outlet pressure
Flow rate	see chart, at 6 bar inlet pressure and 5 bar outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

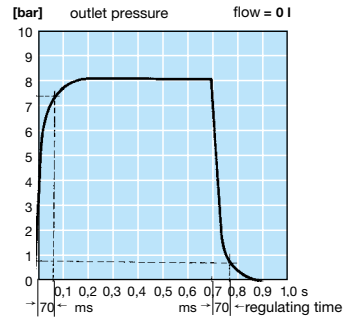
Supply voltage	24 V DC + 15% - 10%, residual ripple max. 10%
Power consumption	12 W at G⅛, 22 W at G¼, 30 W at G½, 44 W at G1
Current consumption	0.5A at G⅛, 1.0A at G¼, 1.25A at G½, 1.7A at G1
Command signal	0 … 10 V, 0 … 20 mA, 4 … 20 mA, digital or Profibus DB rising curve as standard, optionally declining curve
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 500 Ω at current signal
Electrical connector	circular plug according to DIN 43651, 7-pin plug for analogue signal 16-pin plug for digital signal

Accuracy

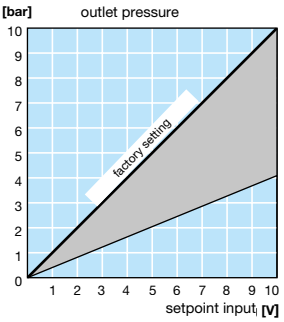
Linearity / Hysteresis	< 1% FS
Response sensitivity	< 0.1% FS
Repeatability	< 0.1% FS
Over all accuracy	± 0.5%
Regulating time	< 1 s over the range, 70 ms at 10 to 90% or 90 to 10% of the range

Adjustment

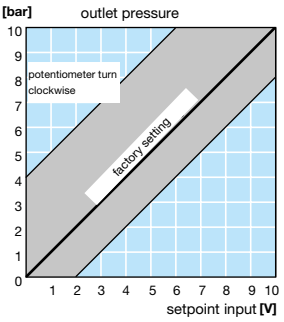
Zero point	calibration ± 10% FS via potentiometer P2
Range	calibration + 5% FS or -10% FS via potentiometer P1
Amplification	calibration 1:1 up to 1:10 via potentiometer P7



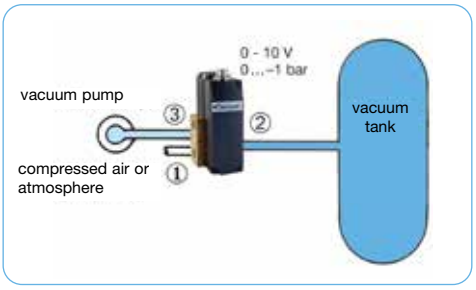
regulating time, step function



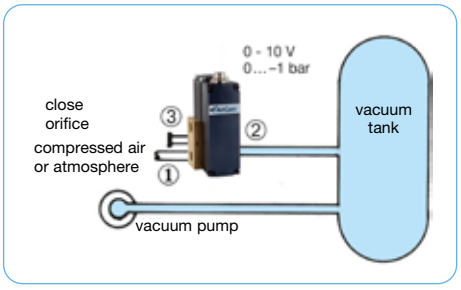
slope, range adjustment



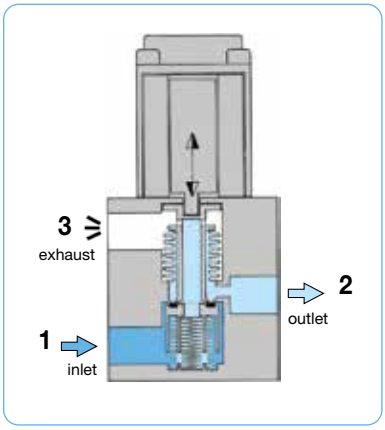
zero point, adjustment



Downstream regulation (V1)
The vacuum pump saves energy and it is easy to fill the tank either with vacuum or pressure. A filter is recommended at orifice ①.



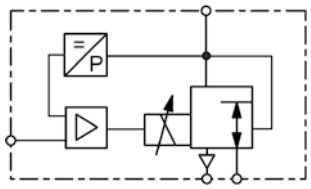
Upstream regulation (V2)
Upstream installation is preferred if rapid evacuation of a tank or system is required. A filter is recommended at orifice ①.



cross-section

Technical features

• **Pressure range**	0…-1.0 bar to 0…50 bar	• **Linearity / Hysteresis**	< 1% FS
• **Command signal**	0…10 V, 0…20 mA, 4…20 mA, digital	• **Response sensitivity**	± 0,5% FS
• **Feedback signal**	0…10 V, 0…20 mA, 4…20 mA	• **Repeatability**	± 0,5% FS
• **Adjustment**	zero point, range and amplification	• **Regulating time**	< 1 s
• **Pressure sensors**	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• **Power consumption**	12 / 22 / 30 / 44 W
• **Flow rate**	250 / 820 / 1700 / 6500 l/min	• **Exhaust**	full nominal size



G⅛ up to G1
0…100 mbar/50 bar

Proportional pressure regulator

0-10 V input signal, supply voltage 24 V DC, with coupling socket

PR

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply max. bar	Connection thread G	Pressure range bar	Order number
35	80	63	3	0.18	210	-1	G⅛	0…-1.0	**PRA00-00V1**
						-1		0…-0.5	**PRA00-00V1A5**
						-1		0…-0.1	**PRA00-00V1A1**
						3		-1,0… 1.0	**PRA00-01V1**
						1		0… 0.1	**PRA00-A100**
						2		0… 0.5	**PRA00-A500**
						2		0… 1.0	**PRA00-0100**
						12		0… 6.0	**PRA00-0600**
						12		0… 10	**PRA00-1000**
						22		0… 20	**PRA00-2000**
52	105	74	6	0.6	700	-1	G¼	0…-1.0	**PR000-00V1**
						-1		0…-0.5	**PR000-00V1A5**
						-1		0…-0.1	**PR000-00V1A1**
						3		-1,0… 1.0	**PR000-01V1**
						1		0… 0.1	**PR000-A100**
						2		0… 0.5	**PR000-A500**
						2		0… 1.0	**PR000-0100**
						12		0… 6.0	**PR000-0600**
						12		0… 10	**PR000-1000**
						18		0… 16	**PR000-1600**
						22		0… 20	**PR000-2000**
						40		0… 30	**PR000-3000**
						60		0… 50	**PR000-5000**
70	150	101	12	1.2	1400	-1	G½	0…-1.0	**PR100-00V1**
						2		0… 1.0	**PR100-0100**
						12		0… 6.0	**PR100-0600**
						12		0… 10	**PR100-1000**
						14		0… 12	**PR100-1200**
96	190	115	20	4.8	5600	-1	G1	0…-1.0	**PR200-00V1**
						2		0… 1.0	**PR200-0100**
						12		0… 6.0	**PR200-0600**
						12		0… 10	**PR200-1000**
						14		0… 12	**PR200-1200**

PRA

PR0

PR1

PR2

*1 at 6 bar supply pressure and 5 bar outlet pressure

* Product group

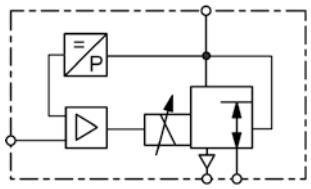
Technical details: see previous page

PDF CAD
www.aircom.net

Order example:
PRA00-00V1

Technical features

• **Pressure range**	0…-1.0 bar to 0…50 bar	• **Linearity / Hysteresis**	< 1% FS
• **Command signal**	0…10 V, 0…20 mA, 4…20 mA, digital	• **Response sensitivity**	± 0,5% FS
• **Feedback signal**	0…10 V, 0…20 mA, 4…20 mA	• **Repeatability**	± 0,5% FS
• **Adjustment**	zero point, range and amplification	• **Regulating time**	< 1 s
• **Pressure sensors**	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• **Power consumption**	12 / 22 / 30 / 44 W
• **Flow rate**	250 / 820 / 1700 / 6500 l/min	• **Exhaust**	full nominal size



G⅛ up to G1
0…100 mbar/50 bar

Special options, add the appropriate letter or number

input signal	0-20 mA		PR . . **1**- . . . .
	4-20 mA		PR . . **2**- . . . .
	8 bit digital with hold function		PR . . **3**- . . . .
	Profibus DP	from G¼ on	PR . . **8**- . . . .
feedback signal	0-10 V		PR . **1** . - . . . .
	0-20 mA		PR . **2** . - . . . .
	4-20 mA		PR . **3** . - . . . .
external feedback signal	0-10 V		PR . **4** . - . . . .
	0-20 mA		PR . **5** . - . . . .
	4-20 mA		PR . **6** . - . . . .
deviant pressure range	indicate on order		PR . . . -**XX**. .
for vacuum	Bypass version	G⅛ and G¼	PR . . . - . . **V2**
		G½	PR1. . - . . **V2**
		G1	PR2. . - . . **V2**
for absolute pressure			PR . . . - . . **0A**
protection class IP65	special cable box, PRK-IP65		PR . . . - . . **06**
body made of stainless steel	valve body and inner parts , 1.4304, EPDM seals, G¼ and G½		PR . . . - . . **SS**
body made of aluminium	nly valve body, max. 20 bar	G¼ only	PR . . . - . . **19**
for oxygen	specially cleaned, FKM elastomer		PR . . . - . . **15**

example: combination PR with booster

Accessories, enclosed

coupling socket	7-pin with 2 m cable	straight	**PRK-A2L**
	7-pin with 5 m cable	straight	**PRK-A5L**
	7-pin with 2 m cable, IP65	straight	**PRK-I 2L**
	7-pin with 2 m cable	angular	**PRK-C2L**
	7-pin with 5 m cable	angular	**PRK-C5L**
other cable length	e.g. 10 m available		

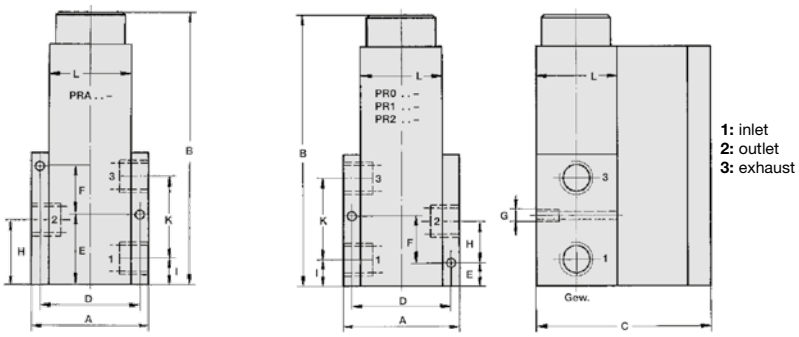
PRK-A **PRK-C**

Technical details: see page 10.08

PDF CAD
www.aircom.net

Order example:
PRA00-00V1

DIMENSIONS AND CONNECTION DIAGRAM "AIRTRONIC"®



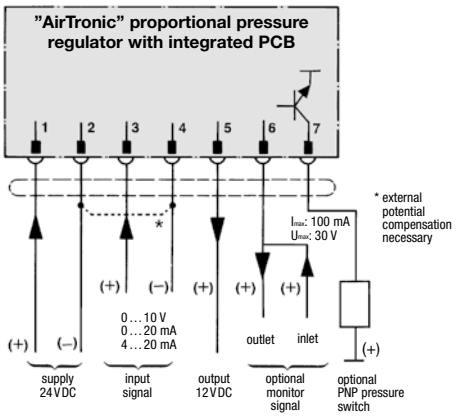
1: inlet
2: outlet
3: exhaust

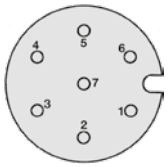
Proport. regulator	thread	A	B	C	D	E
PRA . . –	G ⅛	35	80	63	29	18
PR0 . . –	G ¼	52	105	74	43	10
PR1 . . –	G ½	70	150	101	57.5	12
PR2 . . –	G 1	96	190	115	79	15

Proport. regulator	F	G	H	I	K	L
PRA . . –	7	M 4	15	10	16.6	25
PR0 . . –	20	M 4	16	11*	34	36
PR1 . . –	28	M 6	23	15	48.5	45
PR2 . . –	33	M 8	30	20	60	60

* 14 mm from 30 bar pressure range on

"AIRTRONIC"® PROPORTIONAL PRESSURE REGULATOR WITH INTEGRATED PCB

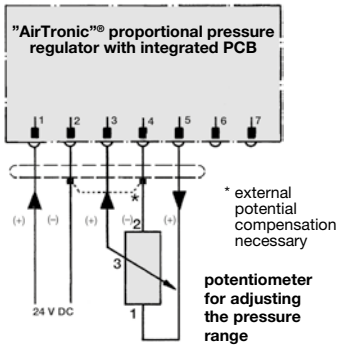




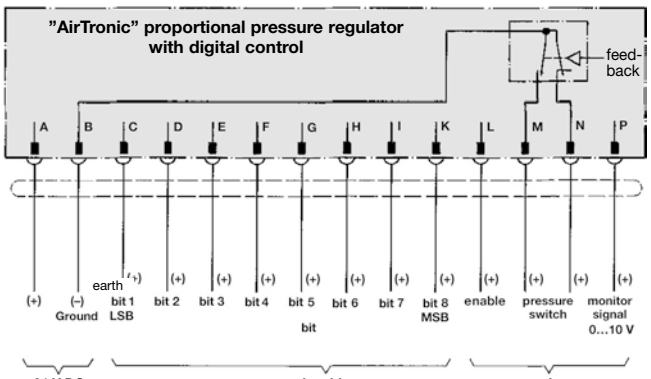
colour of wire		
pin	4-wire	7-wire
1	white	grey
2	brown	blue
3	yellow	yellow
4	green	green
5	–	brown
6	–	white
7	–	pink

pin numbers seen from solder pin side

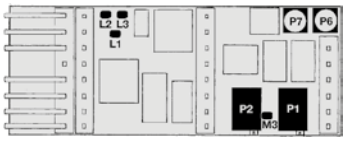
"AIRTRONIC"® CONNECTION DIAGRAM



CONNECTION DIAGRAM WITH POTENTIOMETER

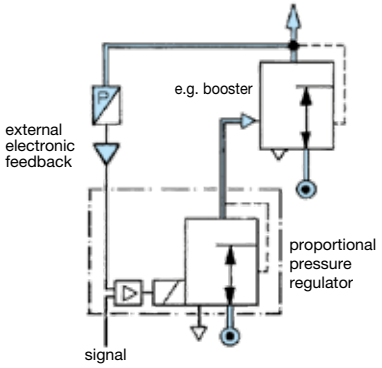


CONNECTION DIAGRAM FOR DIGITALLY CONTROLLED PROPORTIONAL PRESSURE REGULATOR

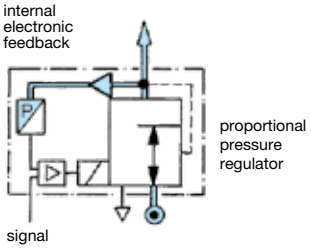


P1	range:	–10%...+5%
P2	zero point:	± 10%
P6	option pressure switch:	5...15%
P7	proportional amplification:	1...11
M3	measuring point offset zero	
L1	earth (GND)	
L2	solenoid	+24 V
L3	solenoid (pulse width modulation)	PWM

ADJUSTMENT OF THE PROPORTIONAL REGULATOR

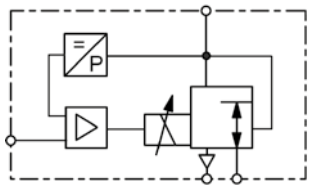


EXTERNAL ELECTRONIC FEEDBACK
0 . . . 10 V or 0/4 . . . 20 mA



INTERNAL ELECTRONIC FEEDBACK
as standard

Description	The pneumatic proportional regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact mono block assembly with proportional solenoid valve, electronic regulator and internal pressure transducer. The valve works as a slide valve and is designed for flow applications such as thermal cutting. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software. Data record can be saved and used for further valves. The valve has a constant bleed. At absence of input signal or supply voltage the valve exhausts.		
Software	Display: signal, outlet pressure, PID parameters, pressure switch signal etc.		
Scope function	view setpoint, outlet pressure, internal signals from PID control		
Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases		
Supply voltage	24 V DC ± 10 V, residual ripple < 10%	**Power consumption**	14 W (810mA current consumption)
Signal range	0-10 V, 100 kΩ impedance 0/4-20 mA, 250 Ω impedance		
Electr. connection	plug M12x1, 5-pin (protection class IP65)	**Mounting position**	any, preferably solenoid on top
Accuracy	hysteresis: 0.5% FS	**Linearity/repeatability**	< ± 0.5% FS
Temp. range	fluid / ambient: 0 °C to 60 °C / 32 °F to 140 °F	**Material**	Body: aluminium Elastomer: NBR/Buna-N



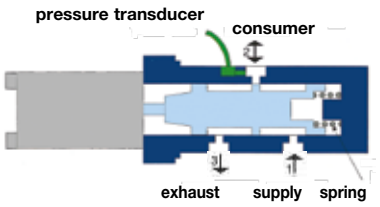
G⅜
0...6 bar/50 bar

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply max. bar	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator						**0-10 V command signal, supply voltage 24 V DC, without M12 coupling socket**			**PF**	
60	160	78	8	1,45	1700	12	G⅜	0... 6	**PF000-0600**	
						18		0... 10	**PF000-1000**	
						18		0... 16	**PF000-1600**	
						22		0... 20	**PF000-2000**	
						40		0... 30	**PF000-3000**	
						50		0... 40	**PF000-4000**	
						60		0... 50	**PF000-5000**	

PF

Special options, add the appropriate letter or number

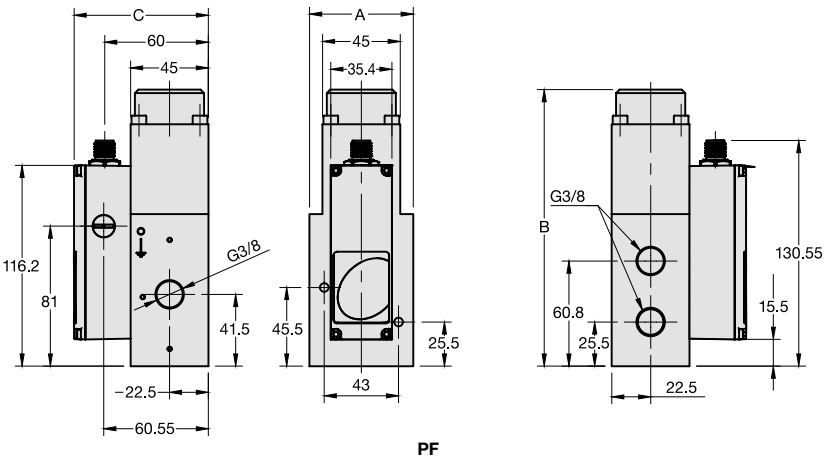
commmand signal	0-20 mA	PF . . **1**- . . . .
	4-20 mA	PF . . **2**- . . . .
monitor signal	0-10 V	PF . **1** . - . . . .
	4-20 mA	PF . **3** . - . . . .
deviant pressure range	indicate on order	PF . . . -**XX**. .
for oxygen	specially cleaned, FKM elastomers	PF . . . - . . **15**



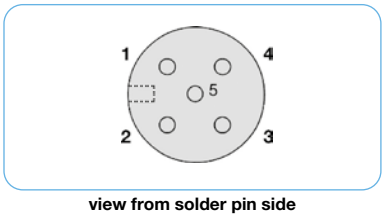
The position of the slide is continuously shifting according to command signal and pressure change at the outlet. Thereby a constant outlet pressure is achieved.

Accessories, enclosed

PR adapter	with USB plug and 1 m cable		**PDUSB**
software	basic version "light"		**PDSOFT1***2
coupling socket	M12x1, 5-pin, with 2 m cable, 5 x 0.25	angular	**KM12-C5-2**
	M12x1, 5-pin, with 5 m cable, 5 x 0.25	angular	**KM12-C5-5**



PF



view from solder pin side

pin	description	5-wire cable (2m)
1	24 V supply voltage	brown
2	analog input signal	white
3	supply ground	blue
	analog ground	
4	analog outlet signal	black
5	digital pressure switch signal	grey
housing	EMC shield	shield

connection diagram

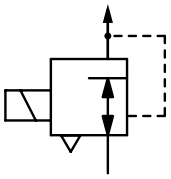
*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!

* Product group

PDF CAD
www.aircom.net

Order example:
PF000-0600

Description	Proportional pressure regulator without integrated control electronics and without internal pressure sensor. The setpoint is given to the solenoid as a 24V PWM signal. The output pressure of the proportional pressure controller can be measured with an external sensor. This turns an „open" control loop into a closed control loop.
Media	dry, lubricated or non-lubricated and 50 µm filtered compressed air or neutral gases
Signal voltage	24 V DC +/-10%
PWM frequency	G¼: 330 to 1000 Hz G½ and G1: 330 to 700 Hz
Rated current	DN6: 1000 mA (24 W); DN12: 1400 mA (34 W); DN20: 1800 mA (44 W)
Electrical connector	Coupling socket according to DIN 43650
Accuracy	depending on the quality of the external sensor and the design of the control loop, < 1% possible
Regulating time	1s over the control range, 70 ms over 90% of the range at 0 liter volume
Mounting position	vertical **Protection class:** IP 65
Temperature range	Ambience: -10 °C bis +60 °C / 14 °F to 140 °F
Material	Body: Aluminium Inner valve: stainless steel and brass Elastomer: NBR/Buna-N



G¼ to G1

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	P1 max. bar	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator without electronics									**PG**	
52	115	35	6	0.6	700	8	G¼	0 ... 6	**PG2-0600**	
						16		0 ... 16	**PG2-1600**	
70	151	45	12	1.2	1400	12	G½	0 ... 12	**PG4-1200**	
96	188	60	20	4.8	5600	12	G1	0 ... 10	**PG8-1000**	

PG2

PG4

Special options, add the appropriate letter

FKM elastomers PG . - . . . . **V**

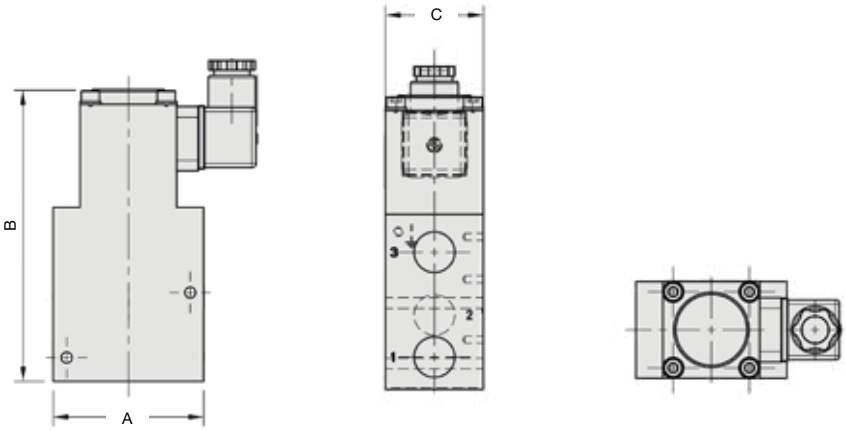
Accessories, enclosed

Plug amplifier

Electrical connection M12, 5-pin
Configuration via PC interface and programming adapter
or alternatively via switches integrated in the line socket.
Supply voltage: 24 V DC Rated current: max. 1.1 A

command signal: 0-10V	for PG2	**PVY-02U**
command signal: 4-20mA	for PG2	**PVY-02I**

Plug amplifier PVY-02.



PG4

1: Input
2: Output
3: Exhaust

* product group

PDF CAD
www.aircom.net

Order example: PG2-0600

Description

Piezo-operated proportional pressure regulator based on the principle of a piezo element which bends when voltage is applied. At the end of the piezo element is a flapper valve, which operates against a precision nozzle to create back pressure on the control diaphragm of a booster relay. A pressure transducer provides feedback of the outlet pressure compared with the setpoint value with correction by the electronic control system if necessary.

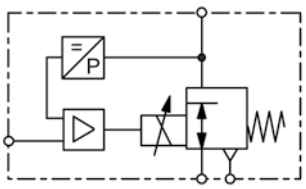
Minimal power consumption
- no self-heating, even none at pressure absence
- safe battery operation over a long period

Piezo element
- almost no power consumption necessary for regulation
- extremely quick regulating operations
- low-noise regulation especially for medical and laboratory technology

Small and light design
- particularly suitable for portable devices in conjunction with battery operation
- ideal for limited space conditions

PRE1 DN 2.5, 350 l/min, coupling socket M8x1, 3-pin, monitor signal, 4-pin
monitor signal optionally 0…P_{2max} ≙ 0…10 V, max. 1 mA, R_a > 1kΩ

PRE2 DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin
monitor signal standard 0…P_{2max} ≙ 0…10 V, max. 1 mA, R_a > 1kΩ



0 - 200 mbar / 16 bar
10 ms, 800 mW, 2100 l/min

General features

Description	Piezo-operated 3-port/2-way proportional pressure regulator with internal pressure sensor and closed loop.
Protection class	IP 30 for PRE1 according to DIN EN 60529 IP 65 for PRE2 according to DIN EN 60529 with coupling socket and tapped exhaust
Mounting position	any
Temperature range	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: plastic, PRE1 IXEF1022 PRE2 Grivory GVX-65H Elastomer: NBR/Buna-N Inner valve: brass and spring steel

Pneumatic features

Media	dry, unlubricated and 5 µm filtered compressed air or non-corrosive gases
Supply pressure	min. 1.5 bar (at P_2 ≤ 8 bar) or 2 bar (at P_2 ≥ 8 bar) and additional P_1 min. 1 bar greater than P_2 max. 2.5 bar up to 17 bar, depending on pressure range according to chart
Flow rate	PRE1: max. 350 l/min at P_1 = 10 bar, P_2 = 6 bar and open outlet DN 2.5 PRE2: max. 1600 l/min at P_1 = 10 bar, P_2 = 6 bar and open outlet DN 6
Exhaust	PRE1: 180 l/min at P_2 = 6 bar, 20 l/min at P_2 = 200 mbar PRE2: 1000 l/min at P_2 = 6 bar, 400 l/min at P_2 = 2 bar
Air consumption	PRE1: < 1.0 l/min independent of pressure range PRE2: < 1.0 l/min independent of pressure range

Electrical features

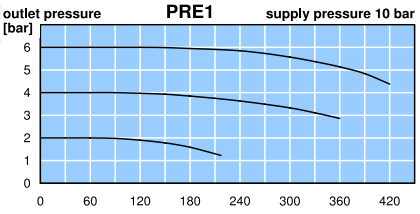
Supply voltage	PRE1: 24 V DC ± 10%, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC ± 10%, 0.8 W, current consumption max. 30 mA
Command signal	4 … 20 mA or 0 … 10 V
Impedance	PRE1: ≥ 66 kΩ at voltage signal, ≤ 500 Ω at current signal PRE2: ≥ 55 kΩ at voltage signal, ≤ 500 Ω at current signal
Electrical connector	PRE1: coupling socket M8x1, 3-pin PRE1-R: coupling socket M8x1, 4-pin PRE2: coupling socket M12x1, 5-pin
Monitor signal	PRE1-U.R: as option 0…P_{2max} / 0…10 V, max. 1 mA, R_a > 1kΩ PRE2: standard 0…P_{2max} / 0…10 V, max. 1 mA
Electronic switch	PRE2 only, PNP, "on" when setpoint and actual value match in the tolerance range 0 V DC = off, U_N -0,7 V DC = on, output current < 200 mA, tolerance P_2: ± 2%
Failsafe	If signal or electrical supply fails, outlet pressure falls to zero and the regulator exhausts.
Note	For long connection lines shielding is to be used. Pay attention to voltage drops. As the case may be, current signal is preferable.

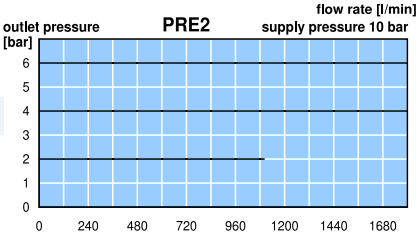
Accuracy

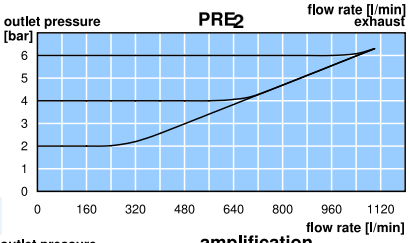
Linearity	< 0.5% FS,	at 0.2 bar range	< 1 % FS	
Hysteresis	< 0.2% FS,	at 0.2 bar range	< 0.5% FS	
Response sensitivity	< 0.1% FS,	at 0.2 bar range	< 0.5% FS at PRE1	< 0.2% FS at PRE2
Repeatability	< 0.2% FS,	at 0.2 bar range	< 0.5% FS	
Response time	10 ms			
Over all accuracy	± 0.2% FS (Monitor signal ± 1,5 % FS)			

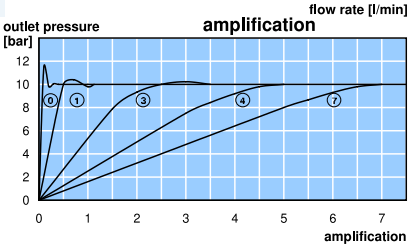
Adjustment

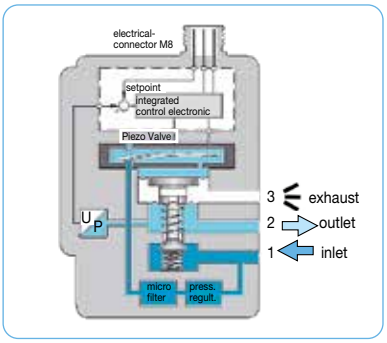
Zero point	calibration only by factory
Range	calibration only by factory



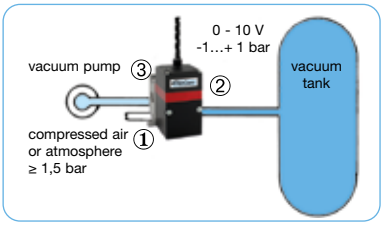








cross-section PRE1



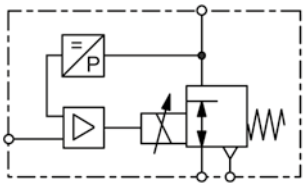
PRE2-V1 for vacuum

PDF CAD
www.aircom.net

PIEZO PROPORTIONAL PRESSURE REGULATOR, VERY FAST, 400 MW — PRE

Technical features

• **Highly dynamic**	10 ms, critical frequency 43 Hz	• **Linearity**	< 0.5% or 1% FS
• **Low power consumption**	400 mW / 800 mW nominal power	• **Hysteresis**	< 0.2% or 0.5% FS
• **No self-heating**	due to low power consumption	• **Response sensitivity**	< 0.1% or 0.5% FS
• **Battery operation**	due to low power consumption	• **Repeatability**	< 0.2% or 0.5% FS
• **For portable devices**	up to 3 bar pressure range	• **Failsafe**	exhaust at power breakdown
• **No over-oscillation**	adjustable closed loop amplification	• **Protection class**	IP 30 or IP 65
• **No resonance oscillation**	adjustable closed loop amplification	• **Two-wire system**	for signal 4 … 20 mA



0 … 200 mbar / 16 bar
10 ms, 800 mW, 2400 l/min

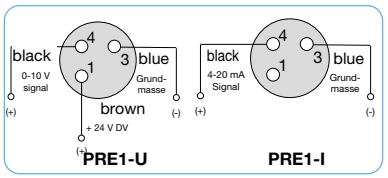
Dimensions A mm	B mm	C mm	Supply pressure max. bar	Flow rate l/min*1	Connection thread G	Pressure range bar	Order number for inlet signal 4-20 mA	0-10 V	E*
Proportional press. regl.			supply voltage 24 V DC, constant bleed, with angular coupling socket and 5 m cable				**PRE**	**PRE**	
36	61	53	2.5	100	G⅛	0 … 0.2	**PRE1-IA2**	**PRE1-UA2**	
			6.0	200		0 … 2	**PRE1-I02**	**PRE1-U02**	
			10	250		0 … 5	**PRE1-I05**	**PRE1-U05**	
				280		0 … 6	**PRE1-I06**	**PRE1-U06**	
				350		0 … 8	**PRE1-I08**	**PRE1-U08**	
46	84	68	2.5	800	G¼	-1 … 1	**PRE2-I01V1**	**PRE2-U01V1**	
			10	1 500		-1 … 4	**PRE2-I04V1**	**PRE2-U04V1**	
				1 500		-1 … 6	**PRE2-I06V1**	**PRE2-U06V1**	
			12	1 700		-1 … 10	**PRE2-I10V1**	**PRE2-U10V1**	
			2.5	500		0 … 0.5	**PRE2-IA5**	**PRE2-UA5**	
				900		0 … 1	**PRE2-I01**	**PRE2-U01**	
			7.0	1 100		0 … 2	**PRE2-I02**	**PRE2-U02**	
				1 100		0 … 3	**PRE2-I03**	**PRE2-U03**	
			10	1 500		0 … 4	**PRE2-I04**	**PRE2-U04**	
				1 500		0 … 5	**PRE2-I05**	**PRE2-U05**	
				1 500		0 … 6	**PRE2-I06**	**PRE2-U06**	
			12	1 700		0 … 10	**PRE2-I10**	**PRE2-U10**	
			17	2 400		0 … 16	**PRE2-I16**	**PRE2-U16**	

PRE1

PRE2

Special options, add the appropriate letter

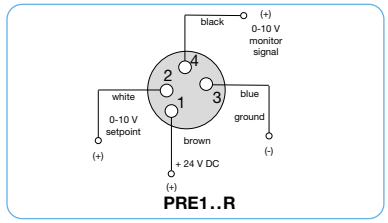
monitor signal	0-10 V, standard at PRE2	for PRE1-U	PRE1-. . . **R**
flange connection	without manifold		PRE. - . . . **F**
w/o coupling socket	and without cable		PRE. - . . . **H**
mounting clips	for DIN rail		PRE. - . . . **C**
deviant pressure ranges			PRE. - . **XX**
for oxygen*2	specially cleaned		PRE. - . . . **15**



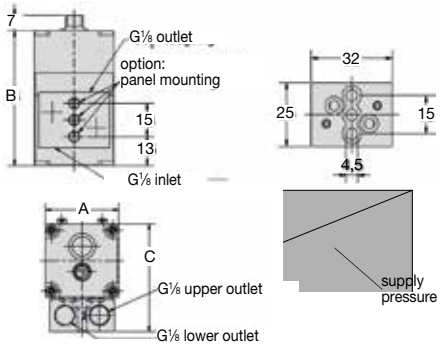
connection diagram

Accessories, enclosed

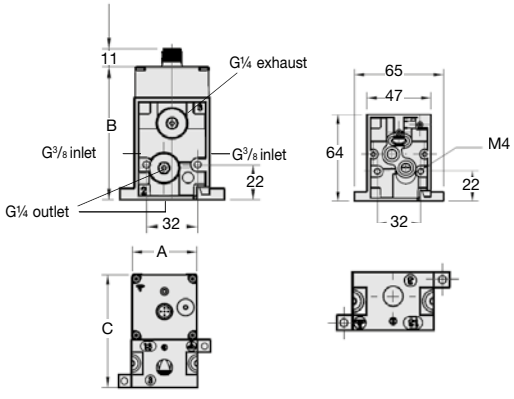
coupling socket	with 5 m cable, angular	M8x1,	3-pin	for PRE1 **KM08-C3-5**
		M8x1,	4-pin	for PRE1-R **KM08-C4-5**
		M12x1,	5-pin	for PRE2 **KM12-C5-5**



connection diagram

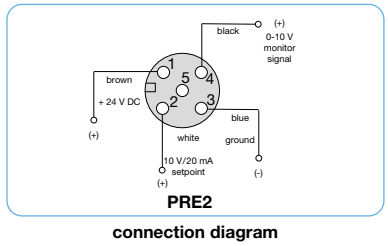


PRE1



PRE2

*1 at open outlet
*2 by PRE1 no tapped exhaust on the manifold



connection diagram

* Product group

Technical details: see previous page

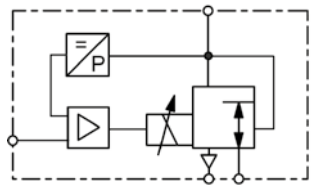
PDF CAD
www.aircom.net

Order example: PRE1-IA1

Description The pneumatic proportional regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact mono block assembly with proportional solenoid valve, electronic regulatior and internal pressure transducer. The valve works as a 3-port/2-way valve with proportional magnet. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software. Data record can be saved and used for further valves. The valve has no constant bleed. At absence of input signal or supply voltage the valve exhausts.

Software

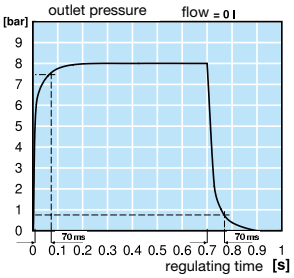
Display:	signal, outlet pressure, parameter, pressure switch signal etc.
Scope function:	view setpoint, outlet pressure, internal signals from PID control
Parameters:	command signal, zero point, overload threshold, ramp
Valve diagnosis:	parameters factory set or customised, optimization of the valve



G⅛ up to G1

General technical features

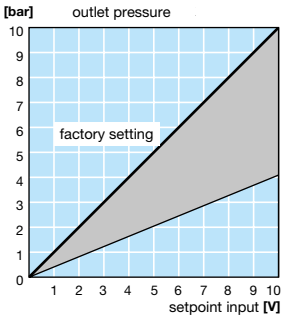
Description	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably vertical
Protection class	IP65 with mounted coupling socket
Shock resistance	3G
Temperature range	0 °C to 60 °C / 32 °F to 140 °F, fluid / ambient temperature
Material	Body: brass (for G⅛ and G¼) or aluminium (for G½ and G1) Inner valve: brass and stainless steel Seals: NBR/Buna-N, EPDM or FKM on request, FKM for 50 bar version



regulating time, step function

Pneumatic features

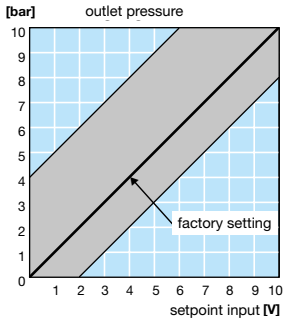
Media	dry, lubricated, unlubricated and 5 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	see chart, at 6 bar supply pressure and 5 bar outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption



slope, range adjustment

Electrical features

Supply voltage	24 V DC ±10%
Electrical connection	M12, 5-pin coupling socket
Power consumption	12 W at G⅛, 24 W at G¼, 34 W at G½, 44 W at G1
Current consumption	500 mA at G⅛, 1000 mA at G¼, 1400 mA at G½, 1800 mA at G1
Command signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 250 Ω at current signal
Setpoint input	0-10 V, 0-20 mA, 4-20 mA



zero point, adjustment

Accuracy

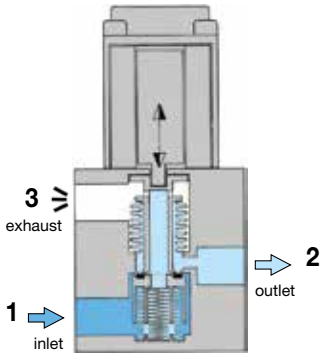
Linearity	< ± 0.5% FS
Hysteresis	< ± 1.0% FS
Repeatability	± 0.5% FS
Response sensitivity	± 1.0% FS

Adjustment and parameter settings

Zero point / range	Zero point and range can be calibrated percentagewise.
Control mode / Amplification	Through the software different control modes may be chosen. All parameters of P/PI/PID controllers can be tuned.
Diagnosis	A diagnostic tool including data recording is available within the software.
Characteristic curve	Increasing or decreasing curve can be set (increasing by standard).

Downstream regulation for vacuum/positive pressure regulators (V1)
Recommended when tank shall be evacuated or filled with positive pressure. At inlet port (1) either compressed air or atmosphere has to be applied. The use of a filter is advisable.

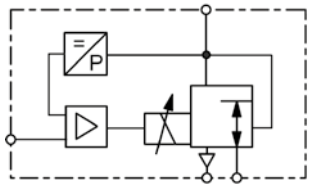
Downstream regulation for vacuum regulators (V3)
Recommended when tank shall be evacuated. Exhaust port (3) will be closed. Inlet port (1) must be connected with vacuum pump. Outlet port (2) has to be connected with consumer or tank.



cross section

Technical features

• **Pressure range**	0…0.1 bar bis 0…50 bar	• **Linearity**	< ± 0.5% FS
• **Command signal**	0-10 V, 0-20 mA, 4-20 mA	• **Hysteresis**	< ± 1.0% FS
• **Output signal**	0-10 V, 0-20 mA, 4-20 mA	• **Response sensitivity**	± 1.0% FS
• **Regulating time**	< 1 s	• **Repeatability**	± 0.5% FS
• **Pressure sensor**	100 / 500 mbar, 1 / 5 / 10 / 16 / 20 / 30 / 50 bar	• **Rated input**	12 / 22 / 30 / 44 W
• **Flow rate**	250 / 820 / 1700 / 6500 l/min	• **Relief capacity**	full nominal size

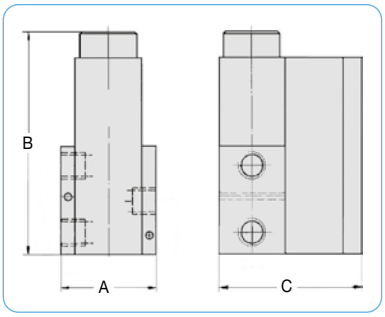


G⅛ up to G1
0…100 mbar/50 bar

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply max. bar	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator 0-10 V command signal, supply voltage 24 V DC, with coupling socket									**PP**	
35	83	57	3	0.18	210	-1	G⅛	0…-1.0	**PPA00-00V3**	
						2		0… 0.1	**PPA00-A100**	
						2		0… 0.5	**PPA00-A500**	
						2		0… 1.0	**PPA00-0100**	
						8		0… 3.0	**PPA00-0300**	
						12		0… 6.0	**PPA00-0600**	
						12		0… 10	**PPA00-1000**	
						18		0… 16	**PPA00-1600**	
						22		0… 20	**PPA00-2000**	
						30		0… 25	**PPA00-2500**	
52	105	68	6	0.6	700	-1	G¼	0…-1.0	**PP000-00V3**	
						2		0… 0.1	**PP000-A100**	
						2		0… 0.5	**PP000-A500**	
						2		0… 1.0	**PP000-0100**	
						8		0… 3.0	**PP000-0300**	
						12		0… 6.0	**PP000-0600**	
						12		0… 10	**PP000-1000**	
						18		0… 16	**PP000-1600**	
						22		0… 20	**PP000-2000**	
						40		0… 30	**PP000-3000**	
						60		0… 50	**PP000-5000**	
70	136	85	12	1.2	1400	-1	G½	0…-1.0	**PP100-00V3**	
						2		0… 1.0	**PP100-0100**	
						8		0… 3.0	**PP100-0300**	
						12		0… 6.0	**PP100-0600**	
						12		0… 10	**PP100-1000**	
						14		0… 12	**PP100-1200**	
96	190	101	20	4.8	5600	-1	G1	0…-1.0	**PP200-00V3**	
						2		0… 1.0	**PP200-0100**	
						8		0… 3.0	**PP200-0300**	
						12		0… 6.0	**PP200-0600**	
						12		0… 10	**PP200-1000**	
						14		0… 12	**PP200-1200**	

PPA

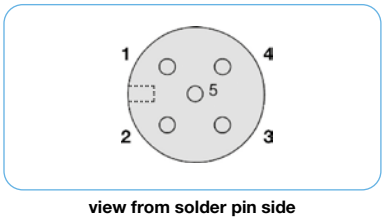
PP0



dimensions

Special options, add the appropriate letter or number

setpoint input	0-20 mA	**1**			4-20 mA	PP . . **2**- . . . .
feedback output	0-10 V	**1**	0-20 mA	**2**	4-20 mA	PP . **3** . - . . . .
deviant pressure range	indicate on order					PP . . . -**XX**. .
for absolute pressure						PP . . . - . . **0A**
body made of stainless steel	P_2 = max. 20 bar, body / inner parts, 1.4304, EPDM, G¼ and G½					PP . . . - . . **SS**
body made of aluminium	valve body only, max. 20 bar				G¼ only	PP 0 . . - . . **19**
for oxygen	specially cleaned, FKM elastomer					PP . . . - . . **15**
cascade regulation	w/o monitor signal 2. sensor, electr. feedback 0-10 V					PP . . . - . . . . **KU**
	w/o monitor signal 2. sensor, electr. feedback 4-20 mA					PP . . . - . . . . **KI**



view from solder pin side

Accessories, enclosed

PR adapter	with USB plug and 1 m cable				**PDUSB**
software	basic version "light"				**PDSOFT1***2
coupling socket	M12x1,	5-pin with	2 m cable, 5 x 0.25	angular	**KM12-C5-2**
			5 m cable, 5 x 0.25	angular	**KM12-C5-5**
adapter cable	M12x1,	5-pin with	0.2 m cable		**PRK-PR-PP**

pin	description		5-wire cable (2m)
1	24 V supply voltage		brown
2	analog input signal		white
3	supply earth		blue
	analog earth		
4	analog outlet signal		black
5	digital pressure switch signal		grey
housing	EMC shield		shield

connection diagram

*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!

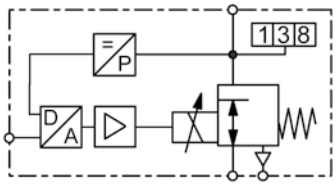
* Product group

Technical details: see previous page

PDF CAD
www.aircom.net

Order example:
PPA00-00V3

Description	The proportional pressure regulator is digitally controlled and works as a 3/2 valve with proportional magnet and closed loop. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software.
Software	Display: signal, outlet pressure, PID parameters, pressure switch signal etc. Scope function: view setpoint, outlet pressure, internal signals from PID control
Parameters	command signal, zero point, overload threshold, ramp Valve diagnosis: parameters factory-set or customised, optimization of the valve.



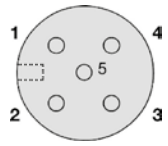
G⅛ to G⅜ or flange programmable

General technical features

Description	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably upright
Protection class	IP65 with mounted coupling socket
Temperature range	0 °C to 50 °C / 32 °F to 122 °F ambient
Material	Body: aluminium Inner valve: POM (Polyacetal) Elastomer: NBR/Buna N and FPM

Pneumatic features

Media	dry, lubricated or unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	see chart, at 7 bar supply pressure and open outlet
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption



view from solder pin side

Electrical features

Supply voltage	24 V DC ± 10%
Electrical connection	M12x1, 5-pin plug, with coupling socket
Power consumption	12 W at nominal size 4, 40 W at nominal size 8
Current consumption	850 mA at nominal size 4, 1640 mA at nominal size 8
Command signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 500 Ω at current signal
Feedback output	0-10 V = 3 bar only, 6 bar and 10 bar pressure range possible

pin	description	5-wire cable (2m)
1	24 V supply voltage	brown
2	analog input signal	white
3	supply ground	blue
	analog ground	
4	analog outlet signal	black
5	digital pressure switch signal	grey
housing	EMC shield	shield

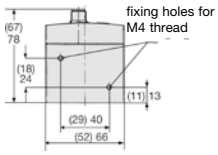
Accuracy

Linearity / Hysteresis	< 1,0% FS	**Response sensitivity**	< 0,5% FS
Repeatability	< 0,5% FS	**Minimum setpoint**	100 mV (0.2 mA / 4.2 mA)
Minimum outlet pressure	1% FS	**Over all accuracy**	± 0,5% FS

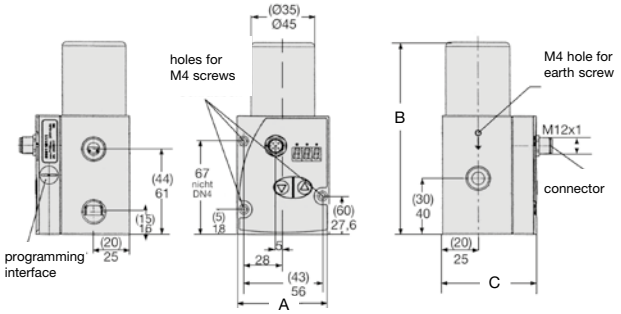
Adjustment and parameter settings

Zero point / range	Zero point and range can be calibrated percentagewise.
Control mode / Amplification	Through the software different control modes may be chosen. All parameters of P/PI/PID controllers can be tuned.
Diagnosis	A diagnostic tool including data recording is available within the software.
Characteristic curve	Increasing or decreasing curve can be set (increasing by standard).

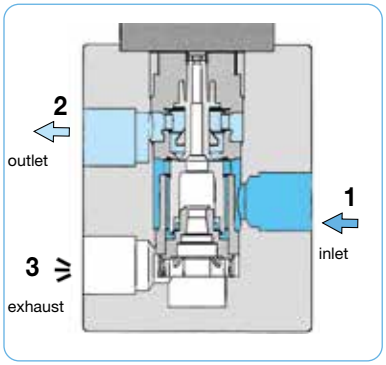
value = DN8
in ( ) = DN4



bottom view



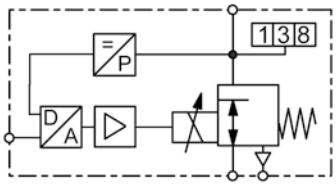
PDA / PDB **version with flange**



cross-section

PDF CAD
www.aircom.net

Description	The proportional pressure regulator is digitally controlled and works as a 3/2 valve with proportional magnet and closed loop. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software.
Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply voltage	24 V DC ± 10 V, residual ripple < 10%
Signal range	0-10 V, 100 kΩ impedance, 0/4-20 mA, 250 Ω impedance
Electrical connection	plug M12x1, 5-pin, with coupling socket
Pressure switch	PNP, adjustable ± 5% from setpoint
Power consumption	21 W at DN4, 40 W at DN8
Linearity/Hysteresis	< 0.5% FS / < 1% FS
Repeatability	< 0.5% FS
Mounting position	any
Protection class	IP65
Temperature range	fluid: 0 °C to 60 °C / 32 °F to 140 °F
ambient:	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: aluminium Elastomer: NBR/Buna-N
Inner valve:	POM



G⅛ to G⅜ or flange programmable

Dimensions A mm	B mm	C mm	Nominal size DN	Flow rate l/min*1	Supply max. bar	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator									
52	112	67	4	0.43	470	6	G⅛	0 … 1	**PDA41-010**
						6		0 … 3	**PDA41-030**
						9		0 … 5	**PDA41-050**
						9		0 … 6	**PDA41-060**
						13		0 … 8	**PDA41-080**
						13		0 … 10	**PDA41-100**
						13		0 … 12	**PDA41-120**
						6	G¼	0 … 1	**PDA42-010**
						6		0 … 3	**PDA42-030**
						9		0 … 5	**PDA42-050**
						9		0 … 6	**PDA42-060**
						13		0 … 8	**PDA42-080**
						13		0 … 10	**PDA42-100**
						13		0 … 12	**PDA42-120**
66	138	78	8	1.2	1300	6	G¼	0 … 1	**PDA82-010**
						6		0 … 3	**PDA82-030**
						9		0 … 5	**PDA82-050**
						9		0 … 6	**PDA82-060**
						13		0 … 8	**PDA82-080**
						13		0 … 10	**PDA82-100**
						13		0 … 12	**PDA82-120**
						6	G⅜	0 … 1	**PDA83-010**
						6		0 … 3	**PDA83-030**
						9		0 … 5	**PDA83-050**
						9		0 … 6	**PDA83-060**
						13		0 … 8	**PDA83-080**
						13		0 … 10	**PDA83-100**
						13		0 … 12	**PDA83-120**

0-10 V input and outlet signal, supply 24 V DC, without display, with coupling socket — **PD**

PDA without display

PDB with display

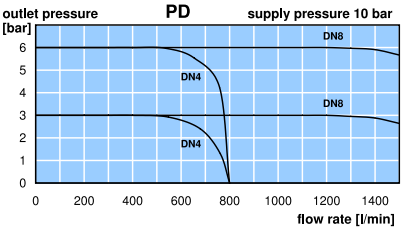
programming via PC

Special options, add the appropriate letter or number

display	3-digit, red		PD**B**. .-. . .
NPT	connection thread		PD . . . -. . . **N**
0-20 mA	setpoint input and monitor signal		PD . . . -. . **1**
4-20 mA	setpoint input and monitor signal		PD . . . -. . **2**
flange version		for PDA41/82	PD . . **F**-. . .
cascade regulation	w/o monitor signal 2. sensor, electr. feedback 0-10 V		PD . . . - . . . **KU**
	w/o monitor signal 2. sensor, electr. feedback 4-20 mA		PD . . . - . . . **KI**

Accessories, enclosed

PR adapter	with USB plug and 1 m cable			**PDUSB**
software	basic version "light"			**PDSOFT1***2
coupling socket	M12x1,	5-pin, with 2 m cable, 5 x 0.25	angular	**KM12-C5-2**
		5 m cable, 5 x 0.25	angular	**KM12-C5-5**



*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!

* Product group

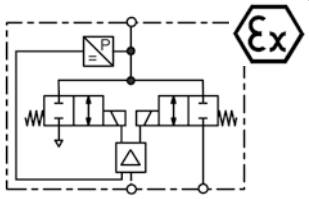
Technical details: see previous page

PDF CAD
www.aircom.net

Order example: PDA41-010

PIEZO PROPORTIONAL PRESSURE REGULATOR WITH ATEX APPROVAL PCEX

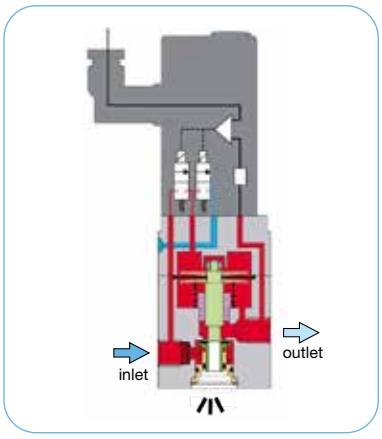
Description	Piezo-operated proportional pressure regulator with closed loop in a two-wire system. Outlet pressure is proportional to an electrical input signal. The valve can be mounted in any position and is immune to shock or vibration. It is pilot-controlled to reach a higher flow rate.		
Media	lubricated or unlubricated and 50 µm filtered compressed air or non-corrosive gases		
Supply voltage	not necessary due to two-wire system (supply through 4...20 mA command signal)		
Electrical connector	coupling socket, 4-pin according to DIN 43650, size 15 x 15 mm connector turnable in 90° steps		
ATEX classification	Compliance with directive 2014/34/EU for use in potentially explosive atmosphere of group IIC, temperature classification T4.	Ignition protection type:	II1G Ex ia IIC T4; II1D Ex D20 T135°C
Power consumption	< 200 mW	**Failsafe feature**	exhaust at power breakdown
Linearity/Hysteresis	< 1% FS	**Repeatability**	< 0.5% FS
Mounting position	any	**Protection class**	IP 65
Air consumption	The pilot valve has an air consumption of 1.6 l/min		
Temperature range	Media: 0 °C to 60 °C / 32 °F to 140 °F	Ambient:	0 °C to 60 °C / 32 °F to 140 °F
Material	Body: aluminium and plastic	Elastomer:	NBR/Buna-N and FKM
	Inner valve: stainless steel and plastic		



G⅛, accurate to 1% with constant bleed

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply min./max. bar	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator 4-20 mA input signal, ATEX with coupling socket, with constant bleed									**PCEX**	
42	143	36	4	0.5	550	2.5 / 3.0	G⅛	0...2	**PCEX-02**	
						3.5 / 5.0		0...3	**PCEX-03**	
						4.5 / 6.0		0...4	**PCEX-04**	
						5.5 / 8.0		0...5	**PCEX-05**	
						6.5 / 8.0		0...6	**PCEX-06**	

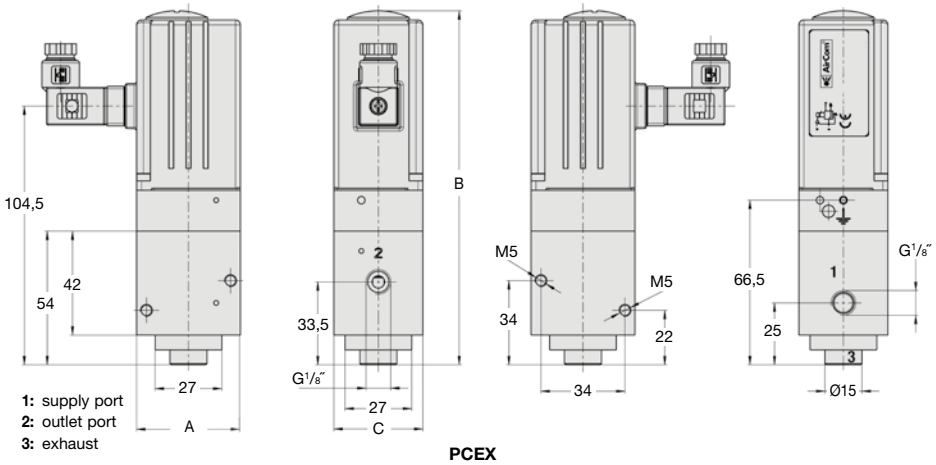
PCEX



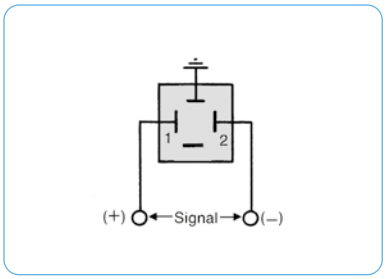
cross-section

Parameter	max. Value
Voltage Ui	30 V
Current Ii	120 mA
Power Pi	800 mW
Inductance Li	0 µH
Capacitance Ci	0 µF

Safety parameters



PCEX



connection diagram

*1 at 6 bar supply pressure, 5 bar outlet pressure, equal exhaust forward flow

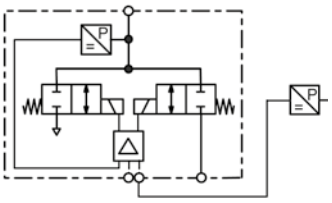
* Product group

PDF CAD
www.aircom.net

Order example: PCEX-02

PROPORTIONAL REGULATOR FOR PRESSURE UP TO 70 BAR — PQH

Description	Proportional pressure regulator with closed loop control technology for better control of pressurised gases. The instrument can be built as single closed loop or dual closed loop control valve.		
Media	dry, lubricated or unlubricated and 20 µm filtered compressed air or non-corrosive gases		
Fail freeze	constant outlet pressure at voltage drop		
Second loop	0-10 V, impedance 4.7 kΩ, ratio of internal to external relationship is 10% to 90%		
Supply voltage	15-24 V DC, residual ripple < 10%, with reverse voltage protection		
Impedance	0-10 V / 10 kΩ, 4-20 mA / 100 Ω		
Protection class	IP65		
Electrical connector	M12, 6-pin		
Power consumption	24 W (985 mA) regulating, 2.4 W (100 mA) non-regulating		
Linearity/Hysteresis	< 0.5% FS	**Repeatability**	< 0.5% FS
Adjustment	zero, span, hysteresis		
Temperature range	0 °C to 70 °C / 32 °F to 158 °F	**Mounting position**	any, vibration-resistant
Material	Ports: brass	Elastomer:	FKM
	Transducer: silicon	Valves:	stainless steel



single or double loop

Dimensions A mm	B mm	C mm	K_v-value (m^3/h)	Flow rate l/min*1	Supply pressure max. bar	Accuracy %	Connection thread G	Pressure range bar	Order number
Proportional pressure regulator 0-10 V input and monitor signal, w. coupling socket supply voltage 24 V DC, single loop									**PQH1**
76	122	8	0.016	280	75	0.5	G⅛	0…40	**PQH1EE-40**
								0…50	**PQH1EE-50**
								0…60	**PQH1EE-60**
								0…70	**PQH1EE-70**
Proportional pressure regulator 0-10 V input, monitor- and feedback signal, with coupling socket, supply volt. 24 V DC, double loop									**PQH2**
76	122	8	0.016	280	75	0.5	G⅛	0…40	**PQH2EE-40**
								0…50	**PQH2EE-50**
								0…60	**PQH2EE-60**
								0…70	**PQH2EE-70**

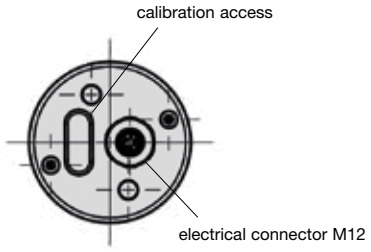
PQH1

Special options, add the appropriate letter or number

4-20 mA	input and feedback signal	PQH . **IC**- . .
for oxygen		PQH . . . - . .**15**
stainless steel manifold		PQH . . . - . .**SS**

Zubehör

coupling socket	M12x1, 8-pin	straight	KM12-A8-0
	M12x1, 8-pin	angled	KM12-C8-0
	M12x1, 8-pin	with 2 m cable, 8x0.25 angled	KM12-C8-2
	M12x1, 8-pin	with 5 m cable, 8x0.25 angled	KM12-C8-5
coupling socket	½″UNF, 3-pin	with 0.9 m cable, for second loop, angular	**PQH-L1**
	½″UNF, 3-pin	with 1.8 m cable, for second loop, angular	**PQH-L2**

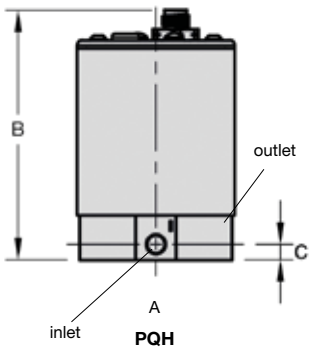


Pneumatic connections

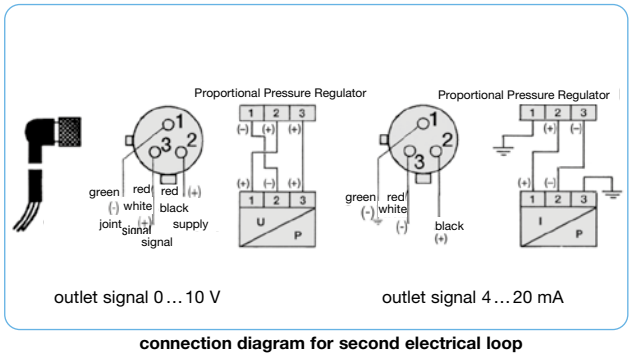
I: inlet
O: outlet
E: exhaust

LED status

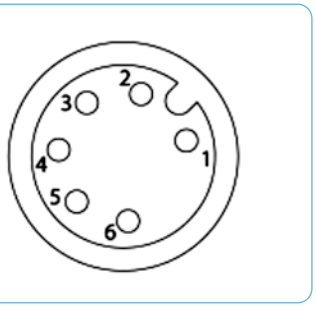
LED red: supply voltage
LED green: setpoint/input value equal



PQH



connection diagram for second electrical loop



view from solder pin side

Pin	Description
1	TTL output
2	set point +
3	set point grounde
4	supply 24V DC
5	supply earth
6	analogue output signal

connection plan

*1 at 70 bar supply pressure and open outlet

* Product group

For further details about double loop see end of the chapter

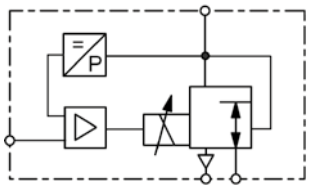
PDF CAD
www.aircom.net

Order example: PQH1EE-40

HIGH PRESSURE PROPORTIONAL PRESSURE REGULATOR UP TO 80 BAR PHP

Technical features

• **Pressure range**	0…30 bar to 0…80 bar	• **Linearity / Hysteresis**	± 3% FS
• **Command signal**	0-10 V, 0-20 mA, 4-20 mA	• **Response sensitivity**	± 3% FS
• **Output signal**	0-10 V, 0-20 mA, 4-20 mA	• **Repeatability**	± 3% FS
• **Regulating time**	< 1 s	• **Protection class**	IP65
• **Flow rate**	40 l/min	• **Relief capacity**	full nominal size



G¼
0…30 / 80 bar

General technical features

Design	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably upright
Protection class	IP65 with mounted coupling socket
Temperature range	0 °C to 60 °C / 32 °F to 140 °F, media- and ambient temperature
Material	Body: aluminium Inner valve: stainless steel Seals: FPM, NBR / Buna-N, TPS

Pneumatic features

Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	up to 40 l/min, at 6 bar supplay pressure and 5 bar outlet
Nominal size	DN 1.0, DN 1.2
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

Supply voltage	24 V DC ± 10%
Electrical connector	M12, 5-pin, with coupling socket
Power consumption	max. 24 W
Current consumption	max. 1000 mA
Command Signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal 250 Ω at current signal
Feedback signal	0-10 V, 0-20 mA, 4-20 mA
Pressure switch	adjustable via software

Accuracy

Linearity / Hysteresis	± 3% FS
Response sensitivity	± 3% FS
Regulating time	< 1 s
Repeatability	± 3% FS
Over all accuracy	± 3% FS

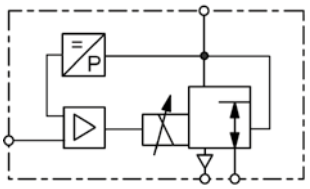
Adjustment

Zero point	The zero point and the end value can be changed in %
Types of regulation/reinforcement	Different types of regulation can be set in the software. P, PI and PID valves can be changed with all individual parameters.
Diagnosis	A diagnostic tool is available in the software.
Characteristic curve	The characteristic curve can be adjusted upwards and downwards, the standard is upwards.

HIGH PRESSURE PROPORTIONAL PRESSURE REGULATOR UP TO 80 BAR PHP

Description The 3-port/2-way proportional high-pressure valve regulates the output pressure proportionally to the electrical input signal in a closed loop. The output pressure is transformed into an electrical signal and compared to the command signal. If the output pressure rises above the pre-selected set point as a result of a pressure increase the valve exhausts to the desired pressure. The digital control system offers the advantage of a quick adjustment of the control parameters during installation or commissioning. The valve does not consume air. At absence of input signal or supply voltage the valve exhausts.

Software
- Visualization: Set point, outlet pressure, control parameters, Pressure switch signal
- Scope Function: Swing-in behaviour can be recorded and read immediately. Data can be accessed.
- Parameterization: Setpoint, zero point, control limit, ramp function
- Valve diagnostics: Custom or factory-specific setting. Optimization of the controller.



G¼
0…30 / 80 bar

Dimensions A mm	B mm	C mm	Nenn-weite DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply pressure max. bar	Connection thread G	Pressure range bar	Order number E*
Proportional pressure regulator 0-10 V input signal, Supply 24 V DC, with coupling socket									**PHP**
72	105	52	1.0	0.035	40	40	G¼	0…30	**PHP00-3000**
						50		0…40	**PHP00-4000**
						60		0…50	**PHP00-5000**
						70		0…60	**PHP00-6000**
						80		0…70	**PHP00-7000**
						90		0…80	**PHP00-8000**

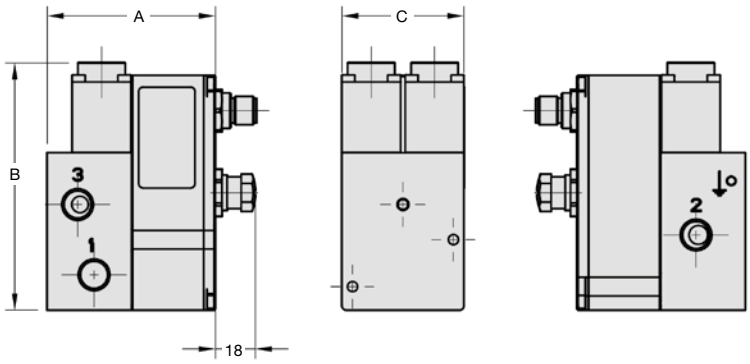
PHP

Special options, appropriate letter or number

setpoint input	0-20 mA		PHP. **1**-….
	4-20 mA		PHP. **2**-….
feedback output	0-10 V		PHP**1**.-….
	0-20 mA		PHP**2**.-….
	4-20 mA		PHP**3**.-….
nominal size DN1,2	K_v value 0.048, V=54 l/min	to PHP..-5000	PHP. .-….**X101**

Accessories, enclosed

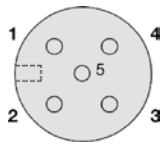
PR module	USB programming module with 1 m cable	**PHPUSB**
Software	Basic version "Light"	**PHPSOFT1***2
coupling socket	M12x1, 5-pin with 2 m cable, 5 x 0.25 angular	**KM12-C5-2**



PHP

1: supply port
2: outlet port
3: exhaust

*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!



view from solder pin side

Pin	Description
1	supply voltage
2	input signal
3	Power supply negativ
4	feedback signal
5	pressure switch
Body	emc shielding

Connection plan

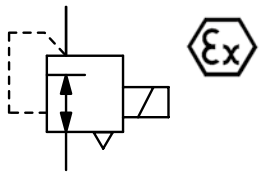
* Product group

PDF CAD
www.aircom.net

Order example:
PHP00-3000

PROPORTIONAL PRESSURE REGULATOR WITH FLAPPER-NOZZLE CONTROL PT6

Description	The proportional pressure regulator translates a direct current or voltage input signal into a proportional pneumatic outlet signal. The valve uses proven moving coil and flapper nozzle technology with a built-in pneumatic relay with slight amplification and positive bias. Additional supply voltage is not necessary. The device has to be protected against vibration.		
Media	5 µm filtered compressed air or non-corrosive gases		
Supply voltage	not required		
Electrical connector	plug according to DIN 43650A, contact gap 18 mm, 3-pin, with coupling socket 30 x 30 mm		
Command signal	0 … 10 V / 1.1 kΩ at PT6..-B, otherwise 900 Ω	4 … 20 mA / 200 Ω at PT6..-B, otherwise 260 Ω	
Failsafe	exhaust at power breakdown	**Response sensitivity**	< 0.2% FS
Linearity	< 0.5 % FS at 0.2…2 bar, otherwise < 1% FS	**Repeatability**	< 0.1% FS
Hysteresis	< 0.25% FS at 0.2…2 bar, otherwise < 1% FS	**Vibration sensitivity**	< 2% FS, for 10 g and 15 … 500 Hz
Adjustment	Zero point: by 0.3 bar Range: 40% FS	**Mounting position**	upright ± 15°
Temperature range	-30 °C to 65 °C / -22 °F to 149 °F	**Protection class**	IP 65
Material	Body: chromated aluminium	Elastomer: NBR/Buna-N	
	Nozzle: sapphire in nickel-plated brass plate	Inner valve: stainless steel, brass, zinc-plated steel	



accurate 0.5% or 1%

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. bar	Command signal V/mA	Pressure range bar	Order number	E*
Proportional pressure regulator 0-10 V ¼" NPT, depending on pressure range air consumption 2…8 l/min							**PT600**	
57	93	13	250	8	0-10 V	0.2 … 1	**PT600-B100**	
						0.2 … 2	**PT600-B200**	
57	132	13	300	10	0-10 V	0 … 2	**PT600-0200**	
						0 … 4	**PT600-0400**	
						0 … 8	**PT600-0800**	
Proportional pressure regulator 4-20 mA ¼" NPT, depending on pressure range air consumption 2…8 l/min							**PT602**	
57	93	13	250	8	4-20 mA	0.2 … 1	**PT602-B100**	
						0.2 … 2	**PT602-B200**	
57	132	13	300	10	4-20 mA	0 … 2	**PT602-0200**	
						0 … 4	**PT602-0400**	
						0 … 8	**PT602-0800**	

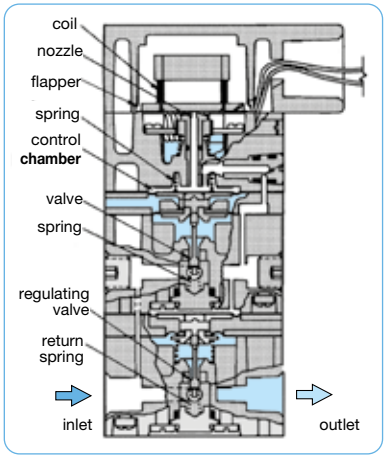
PT60.-0.

Special options, change the appropriate number

Ex-i-Atex	Atex II 1G Ex ia IIC T4	4-20 mA only	PT602-..**01**

Accessories, enclosed

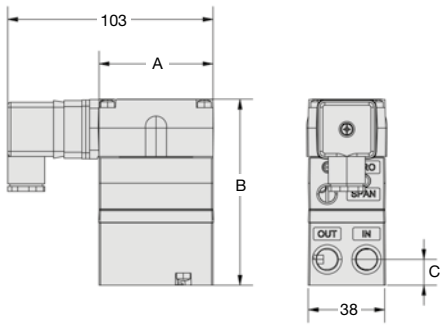
mounting bracket	made of steel, for standard version	**SA-PT1**
	made of plastic, for Din rail	**SA-PT2**
isolate transmitter	Ex ia II C, E/A: 0-20 mA, 24 V DC, EX 1-32	**KFD2-CD**



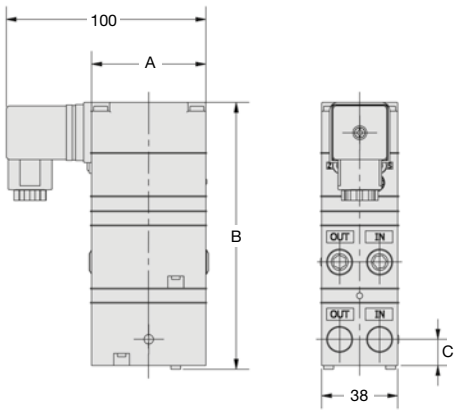
cross-section

Parameter	max. Value
Voltage Ui	28 V
Current Ii	93 mA
Power Pi	653 mW
Inductance Li	0 µH
Capacitance Ci	0 µF

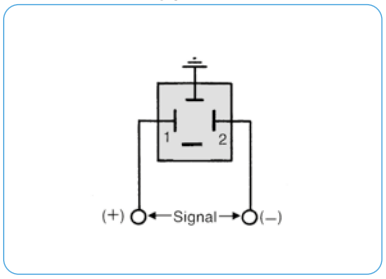
Safety parameters



PT60.-B.



PT60.-0.



connection diagram

*1 at 7 bar supply pressure and 1.4 bar outlet pressure

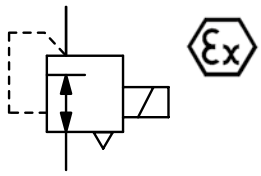
* Product group

PDF CAD
www.aircom.net

Order example: PT600-B100

PROPORTIONAL PRESSURE REGULATOR WITH PIEZO ELEMENT AND ELECTRICAL FEEDBACK PT7

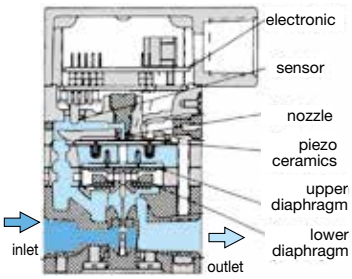
Description	The proportional pressure regulator translates a direct current or voltage signal into a linear proportional pneumatic outlet signal. With rapid response controls using low-powered piezo microelectronics, flapper nozzle and solid state control circuit. The proportional pressure regulator has internal electronic with an electrical feedback sensor and is housed in NEMA4X (IP65) enclosure with six outlet ranges, jumper selectable. Input and outlet ports on both ends of the body simplify pneumatic piping.
Media	5 µm filtered compressed air or non-corrosive gases
Supply voltage	7…30 V DC, 90 mW, required for 0…10 V setpoint input only, with reverse voltage protection
Electrical connector	plug according to DIN 43650A, contact gap 18 mm, 3-pin, with coupling socket 30 x 30 mm
Command signal	0…10 V / 10 kΩ, 3-pin, 24 V DC supply voltage, 4…20 mA / 330 Ω, two-wire, min. 7 V DC on input
Failsafe	exhaust at power breakdown
Response sensitivity	< 0.2% FS
Linearity	< 0.25% FS
Repeatability	< 0.1% FS
Hysteresis	< 0.1% FS at 0.2…0.5 bar, otherwise < 0.25% FS
Vibration sensitivity	< 1% FS, for 10 g and 15…500 Hz
Adjustment	Zero point: by 0.3 bar Range: 40% FS
Mounting position	any
Temperature range	-40 °C to 70 °C / -40 °F to 158 °F
Protection class	IP 65
Material	Body: chromated aluminium
	Elastomer: NBR/Buna-N
	Nozzle: sapphire in nickel-plated brass plate
	Inner valve: stainless steel, brass, zinc-plated steel



accurate to 0.25% piezo-controlled

PT78.-0.

Dimensions A mm	B mm	C mm	Flow rate l/min*1	Supply pressure max. bar	Command signal V/mA	Pressure range bar	Order number
Proportional pressure regulator 0-10 V ¼″ NPT, air consumption 2…8 l/min subject to pressure range							**PT780**
57	95	13	250	8	0-10 V	0.2…1	**PT780-B100**
						0.2…2	**PT780-B200**
57	133	13	300	10	0-10 V	0…2	**PT780-0200**
						0…4	**PT780-0400**
						0…8	**PT780-0800**
Proportional pressure regulator 4-20 mA ¼″ NPT, air consumption 2…8 l/min subject to pressure range							**PT782**
57	95	13	250	8	4-20 mA	0.2…1	**PT782-B100**
						0.2…2	**PT782-B200**
57	133	13	300	10	4-20 mA	0…2	**PT782-0200**
						0…4	**PT782-0400**
						0…8	**PT782-0800**



cross-section

Special options, change the appropriate number

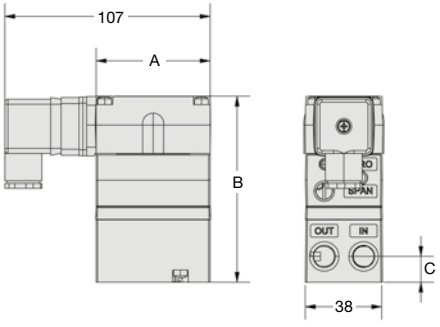
-i-Atex	Atex II 1G Ex ia IIB T4		4-20 mA only	PT782-..**01**
-d-Atex	Atex ds IIC T6	max. 2 bar	4-20 mA only	PT782-..**0E**

Accessories, enclosed

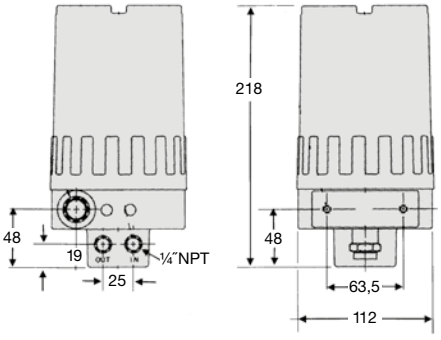
mounting bracket	made of steel, for standard version	**SA-PT1**
	made of plastic, for DIN rail	**SA-PT2**
mounting clip	made of steel, Atex version, explosion-proof	**SA-PT3**
isolate transmitter	Ex ia II C E/A: 0…20 mA, 24 V DC, EX 1-32	**KFD2-CD**

Parameter	max. Value
Voltage Ui	28 V
Current Ii	100 mA
Power Pi	700 mW
Inductance Li	0 µH
Capacitance Ci	12 µF

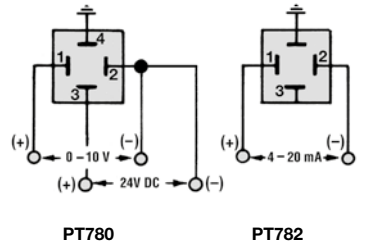
Safety parameters



PT78.-B.



PT782, Atex version, explosion-proof



connecting diagram

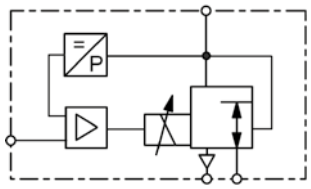
*1 at 7 bar supply pressure and 1.4 bar outlet pressure

* Product group

PDF CAD
www.aircom.net

Order example: PT780-B100

Description	The pneumatic proportional pressure regulator controls the outlet pressure in a complete closed loop servo system in proportion to an digital IO-Link command signal. By using the IO-Link Master the valve can be adapted to special applications and optimize the the response time, the overshoot and the precision of the valve. The valve has no constant bleed. At absence of input signal or supply voltage the pressure of the valve stands.		
Media	dry, lubricated, unlubricated and 50 µm filtered compr. air or non-corrosive gases		
Command signal	Digital command signal in 1mbar steps (0-10000 = 0-10 bar)		**Control** IO-Link (Class A)
Hysteresis	1,5% FS	Supply voltage 24 VDC	**Software:** IODD (necessary)
Linearity	1,5% FS	Electrical connector M12, 5-pin	
Repeatability	1,5% FS	Protection class IP65	
Minimum Command signal	0,5% FS	Current consumption 180 mA	
Minimum Outlet Pressure	1,0% FS	Power consumption 3,8 W (< 1W if regulated)	
Temperature range	0-60 °C Media and Ambient		
Material	Body: aluminium	Inner valve: POM (Polyacetal)	Elastomer: NBR
Mounting position	any, preferably perpendicular		



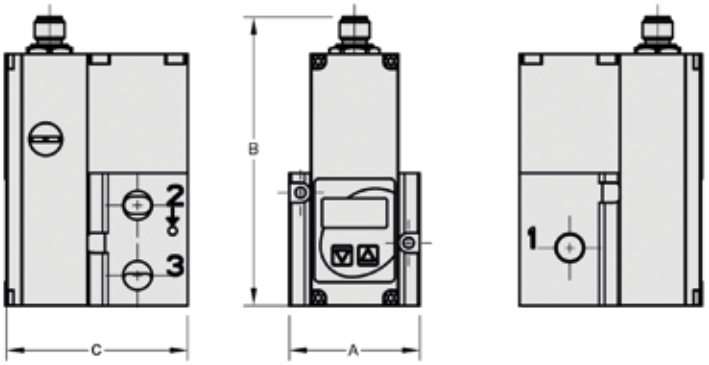
G¼ to G½
0…3 bar/10 bar

Dimensions A mm	B mm	C mm	K_v-value (m^3/h)	Flow rate (m^3/h)	l/min	Supply pressure bar*1	Connection thread G	Pressure range bar	Order number	E*
Proportional pressure regulator						Supply 24 V DC via IO-Link master without coupling socket			**PIO**	
52	115	73	0.43	28,2	470	4	G¼	0… 3	**PIO2-03**	
						7	G¼	0… 6	**PIO2-06**	
						11	G¼	0…10	**PIO2-10**	
66	129	89	1.2	78	1300	4	G⅜	0… 3	**PIO3-03**	
						7	G⅜	0… 6	**PIO3-06**	
						11	G⅜	0…10	**PIO3-10**	
66	144	102	4.8	312	5200	4	G½	0… 3	**PIO4-03**	
						7	G½	0… 6	**PIO4-06**	
						11	G½	0…10	**PIO4-10**	

PIO

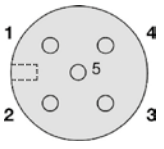
Special options, add the appropriate letter or number

Display	PIO.- . . **B**
for oxygen	PIO.- . . **15**



1: inlet
2: outlet
3: exhaust

PIO



view from solder pin side

Pin	Description
1	24V supply voltage
2	not occupied
3	supply groud
4	C/Q
5	not occupied
Housing	EMC shield

connection plan

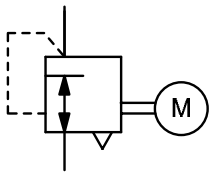
*1 To use the valve, you need the IODD
P1 = at least 1 bar higher than the maximum outlet pressure

* Product group

PDF CAD
www.aircom.net

Order example:
PIO2-03

Description	Motorised air pressure regulator designed for precise pneumatic control using an electrical signal from a remote location. A slip clutch prevents from motor damages at overload or end position limitations.
Media	dry, oil-free and 5 µm filtered compressed air or non-corrosive
Operation	With no electrical power the regulator maintains a precise setpoint despite variable supply pressure and flow rates. When power is applied to the motor the pressure outlet changes.
Power consumption	6 W
Control signal	24 V DC
Electrical connector	4 single wires, optionally plug according to DIN 43650A, contact gap 18 mm, 3-pin with coupling socket
Accuracy	at varying supply pressures: < 1 mbar pressure deviation
Air consumption	max. 2.3 l/min, subject to outlet pressure, < 1% of volume flow
Relieving function	relieving **Mounting position** any, preferably upright
Relief capacity	140 l/min at 1.5 bar outlet and 0.35 bar overpressure above setpoint, optionally 280 l/min
Gauge port	¼˝NPT on both sides of the body **Temperature range** -18 °C to 60 °C / 0 °F to 140 °F
Material	Body: zinc die-cast Elastomer: NBR/Buna-N
	Inner valve: stainless steel and brass Mounting bracket: black-coated steel



¼˝ NPT, 280 l/min

Dimensions A mm	B mm	C mm	Power consumption W	Flow rate l/min*1	Switching time s	Connection thread NPT	Pressure range bar	Order number
Motorised pressure regulator P_1 max. 10 bar, relieving, with constant bleed, control signal 24 V DC, 6 rpm								**P180**
62	195	14	6	280	40	¼˝NPT	0.14 … 1.8	**P180-02AV**
					30		0.14 … 4.0	**P180-02BV**
					50		0.14 … 8.0	**P180-02CV**

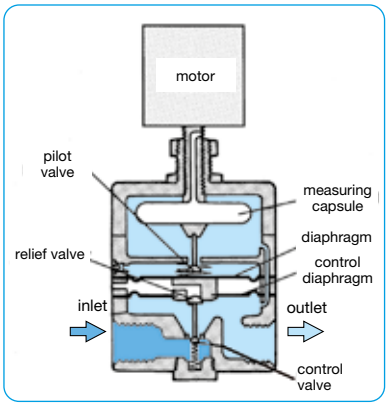
P180

Special options, add the appropriate letter

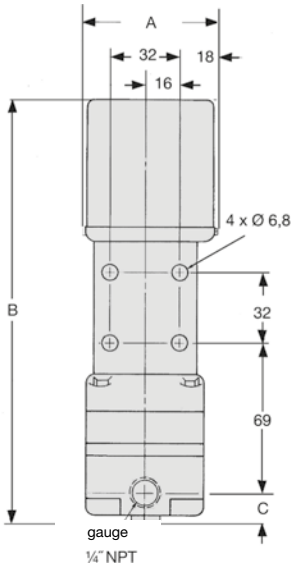
higher exhaust	two times greater than standard	P180-02 . **H**
DIN connector	connection with DIN plug 30 x 30 mm	P180-02 . **D**

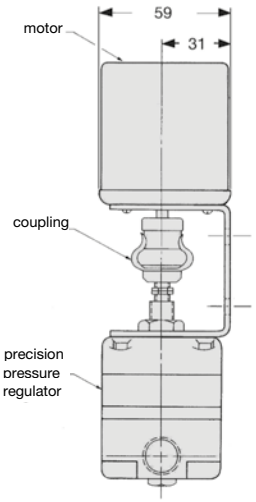
Accessories, enclosed

pressure gauge	Ø 50 mm, 0 … *2 bar, G¼, connecting parts necessary	**MA5002-..*2**
gauge connecting parts	adapter ¼˝NPT - R¼ f	**VP-0202N**

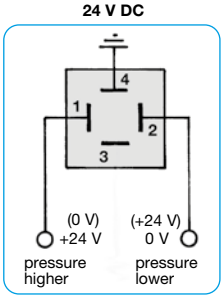


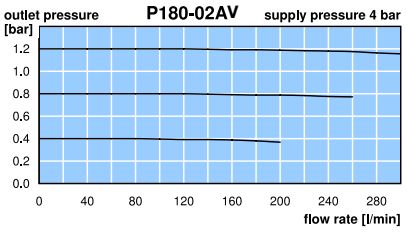
cross-section

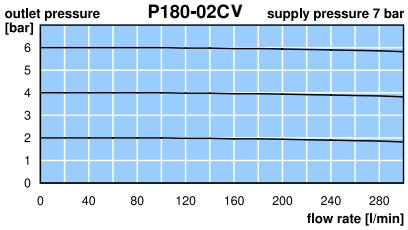




P180







*1 at 7 bar supply pressure and 6 bar outlet pressure
*2 **02** = 0…2,5 bar, **06** = 0…6 bar, **10** = 0…10 bar

PDF CAD
www.aircom.net

Order example: P180-02AV

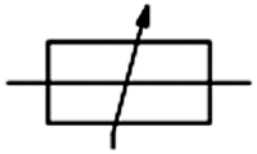
Prop.-D.

Description The series line of potentiometers are designed for use as a command signal for control pressure regulators.

A 10 volt reference is used to provide excitation to the potentiometer. An op-amp measures the output on the wiper of the potentiometer and provides buffering to eliminate external components from affecting the linearity of the potentiometer.
A three wire cord is provided and is attached to the pc board to make necessary power signal and common connections

Field of application 0-10 V version PPB-U is compatible with all proportional pressure regulators.
4-20 mA version PPB-I is compatible with all pressure regulators of Series PQ and PM.
For all other pressure regulators, e.g Series PP, PR, PRE, a setpoint of 4.1 ... 18.5 mA is generated.

Measuring range	0 ... 999	**Supply voltage**	15 - 24 V DC
Current consumption	max. 30 mA	**Linearity/Hysteresis**	± 0.25% FS
Mounting position	any	**Temperature range**	0 °C to 70 °C / 32 °F to 158 °F

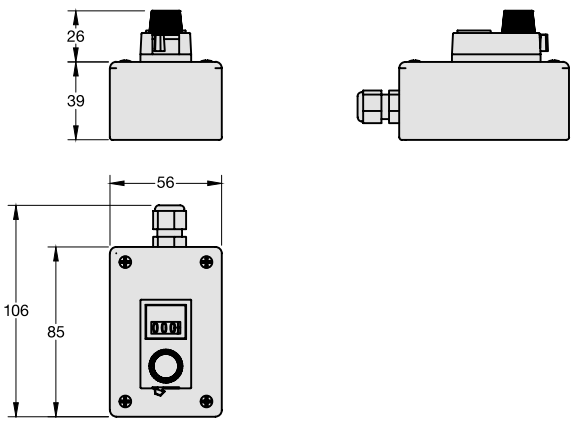


with 10-turn-potentiometer

Dimensions F mm	H mm	G mm	Output signal V / mA	Order number E*
Setpoint Potentiometer			supply voltage 15 - 24 V DC	**PPB**
85	55	40	0-10 V	**PPB-U**
85	55	40	4-20 mA	**PPB-I**

PPB-U

PPB-I



PPB

Pin	Description	3-pin cable
1	voltage supply 24V DC	black
2	analogue setpoint	white
3	supply earth	green

connecting plan

* Product group

PDF CAD
www.aircom.net

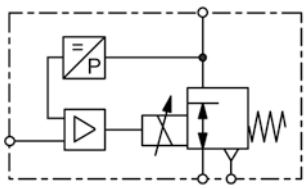
Order example: PPB-U

Prop.-D.
10

VOLUME BOOSTER-PROPORTIONAL PRESS. REGL.-COMBINATIONS

What are volume booster / proportional pressure regulator combinations used for?
Combinations of volume boosters and proportional pressure regulator lend themselves for electronically regulating high volume flows. On the one hand common proportional pressure regulator are not available with connection sizes big enough, on the other hand combinations are in most cases more economic. There are two ways of regulating: Single loop systems are suitable for standard applications without high requirements for accuracy and without consideration of pressure drop at high flow. Double loop regulations on the contrary are much more accurate and also qualified for dynamic processes.

General operational description:
The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.



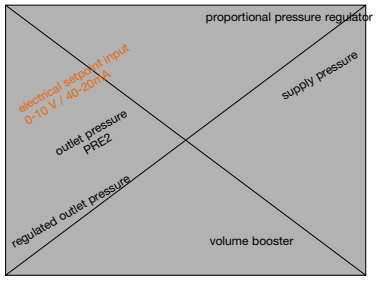
G¼ up to G3
compressed air or liquids

Single loop

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional pressure regulator only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.

Double loop

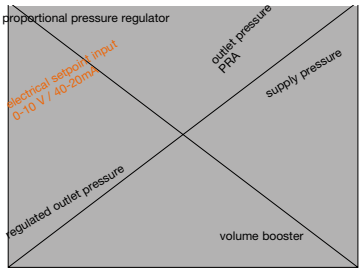
Combinations with a second feedback have the possibility to balance pressure differences. For this a pressure transducer is installed in the outlet line of the booster. The electrical signal of the transducer is applied as a feedback signal onto the proportional pressure regulator. The proportional pressure regulator detects any pressure differences and compensates them automatically. In high flow applications a pressure drop at the outlet of the pilot regulator is thus minimised.



PRE2, R450 with single loop

General features

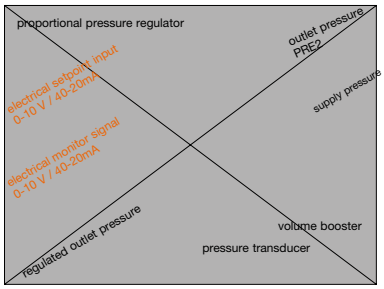
Construction type	The volume booster / proportional pressure regulator combinations are delivered completely assembled and calibrated.
Mounting position	preferred horizontal (see figure)
Protection class	IP 54 with ordinary coupling socket as standard, optionally IP 65 for some devices (see according product information sheets)
Temperature range	0 °C to 50 °C / 32 °F to 122 °F for all proportional pressure regulator, for booster ranges refer to according product sheets



PRA, R119 with single loop

Pneumatic features

Command signal	The proportional pressure regulator may only be fed with dry and 5 µm filtered compressed air. The pneumatic command signal must always be air!
Media	Preferred dry, 5 µm filtered compressed air for supply of the proportional pressure regulator. The volume boosters can operate with air or non-corrosive gases, model R120 even with liquids. The respective air consumption and the relieving function strongly have to be regarded.
Inlet pressure	dependent of the according combination (see according product information sheets)
Pressure supply	The proportional pressure regulator has to be separately supplied with compressed air with regard to the valve's maximum inlet pressure.
Exhaust	The proportional pressure regulator exhausts only the booster's pilot chamber. The booster, if in relieving version, exhausts the volume of the supply pressure line. The relief capacity is subject to the differential pressure.
Volume flow	see specifications of the according volume booster



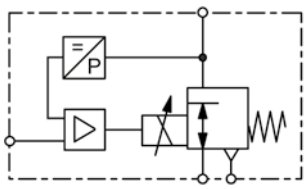
PQ2, R450 with double loop

Electrical features

Supply voltage	All valves have to be supplied with 24 V DC.
Power consumption	see according product information sheets
Setpoint input	0-10 V as standard, optionally 4-20 mA for all valves
Monitor signal	A feedback signal is not reasonable for the single loop version because here only the pressure of the booster's pilot chamber is monitored. That value does not give any information about the outlet pressure behind the booster.

General operational description:
The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional pressure regulator only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.



G¼ up to G3
compressed air or liquids

Single loop combination examples

Flow rate l/min	Connection thread G	Outlet pressure bar	Part number Booster	Part number Prop.press.regl.	Order number of combination	E*
R750 with PRE1, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 17 bar	
1 000	G¼	0... 8	R750-02I	PRE1-U08	**BP1U750-02**	
R450 with PRE1, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 17 bar	
4 000	G½	0... 8	R450-04I	PRE1-U08	**BP1U450-04**	
R119 with PPA, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 21 bar	
5 600	G½	0... 10	R119-04J	PPA00-1000	**BP1U119-04**	
9 000	G¾	0... 10	R119-06J	PPA00-1000	**BP1U119-06**	
10 000	G1	0... 10	R119-08J	PPA00-1000	**BP1U119-08**	
12 000	G1½	0... 10	R119-12J	PPA00-1000	**BP1U119-12**	
42 000	G2	0... 10	R119-16J	PPA00-1000	**BP1U119-16**	
44 000	G2½	0... 10	R119-20J	PPA00-1000	**BP1U119-20**	
110 000	G3	0... 10	R119-24J	PPA00-1000	**BP1U119-24**	
RGB4 with PRE1-.A2, for compressed air or gases					setpoint 0-10 V, P_1 max. 4 bar	
700	G½	0...0,2	RGB4-04J	PRE1-UA2	**BP1UGB4-04**	
2 800	G1	0...0,2	RGB4-08J	PRE1-UA2	**BP1UGB4-08**	
5 600	G1½	0...0,2	RGB4-12J	PRE1-UA2	**BP1UGB4-12**	
RZ1 with PRE1-.01/02, for compressed air or gases					setpoint 0-10 V, P_1 max. 16 bar	
2 900	G1	0... 1	RZ3-08J	PRE1-U02	**BP1UZ-08**	
5 700	G1½	0... 1	RZ3-12J	PRE1-U02	**BP1UZ-12**	
21 000	G2	0... 1	RZ2-16J	PRE1-U02	**BP1UZ-16**	
R120 with PPA, for compressed air, gases or liquids					setpoint 0-10 V, P_1 max. 50 bar	
1 200	G½	0... 15	R120-04J2	PPA00-1600	**BP1U120-04**	
4 200	G¾	0... 15	R120-06J2	PPA00-1600	**BP1U120-06**	
5 000	G1	0... 15	R120-08J2	PPA00-1600	**BP1U120-08**	
1 200	G½	0... 50	R120-04J5	PP000-5000	**BP1U120-04J5**	
4 200	G¾	0... 50	R120-06J5	PP000-5000	**BP1U120-06J5**	
5 000	G1	0... 50	R120-08J5	PP000-5000	**BP1U120-08J5**	
14 000	G1½	0... 50	R120-12J5	PP000-5000	**BP1U120-12J5**	
15 000	G2	0... 50	R120-16J5	PP000-5000	**BP1U120-16J5**	

Special options, add the appropriate letter

4-20 mA	input signal	BP1**I** . . . - . . . .

BP1U750-02

BP1U119-16

BP1UZ-08

BP1U120-08J5

* Product group

Gauges: see chapter for measuring devices
Further details: see chapter for single devices

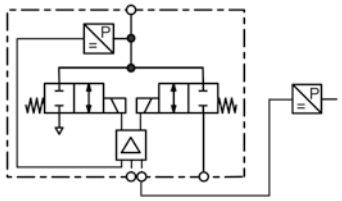
PDF CAD
www.aircom.net

Order example:
BP1U750-02

Proport. pressure
10

General operational description:
The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.

Combinations with a second feedback have the possibility to balance pressure differences. For this a pressure transducer is installed in the outlet line of the booster. The electrical signal of the transducer is applied as a feedback signal onto the proportional pressure regulator. The pressure regulator detects any pressure differences and compensates them automatically. In high flow applications a pressure drop at the outlet of the pilot regulator is thus minimised.



G½ up to G2
compressed air or non-corrosive gases

Double loop combination example

Flow rate l/min	Connection thread G	Outlet pressure bar	Sensor	Part number Booster	Prop.press.regl.	Order number of combination	E*
R450 with PQ2, for compressed air or non-corrosive gases						setpoint 0-10 V, P_1 max. 17 bar	
4000	G½	0... 1	DAV-01H	R450-04I	PQ2EE-01	**BP2U450-0401**	
		0... 6	DAV-06H	R450-04I	PQ2EE-06	**BP2U450-0406**	
		0...10	DAV-10H	R450-04I	PQ2EE-10	**BP2U450-0410**	
R200 with PQ2, for compressed air or non-corrosive gases						setpoint 0-10 V, P_1 max. 17 bar	
28000	G1	0... 1	DAV-01H	R200-08I	PQ2EE-01	**BP2U200-0801**	
		0... 6	DAV-06H	R200-08I	PQ2EE-06	**BP2U200-0806**	
		0...10	DAV-10H	R200-08I	PQ2EE-10	**BP2U200-0810**	
RGB4 with PQ2, for compressed air or gases						setpoint 0-10 V, P_1 max. 4 bar	
700	G½	0...0.35	DAV-C4H	RGB4-04J	PQ2EE-C4	**BP2UGB4-04**	
2800	G1	0...0.35	DAV-C4H	RGB4-08J	PQ2EE-C4	**BP2UGB4-08**	
5600	G1½	0...0.35	DAV-C4H	RGB4-12J	PQ2EE-C4	**BP2UGB4-12**	
RZ1 with PQ2, for compressed air or gases						setpoint 0-10 V, P_1 max. 16 bar	
2900	G1	0...1	DAV-01H	RZ3-08J	PQ2EE-01	**BP2UZ-08**	
5700	G1½	0...1	DAV-01H	RZ3-12J	PQ2EE-01	**BP2UZ-12**	
21000	G2	0...1	DAV-01H	RZ2-16J	PQ2EE-01	**BP2UZ-16**	

Special options, add the appropriate letter

4-20 mA input signal — BP2**I** . . . - . . . .

BP2U450-0406

BP2U200-0806

BP2UGB4-12

BP2UZ-08

* Product group

Gauges: see chapter for measuring devices
Further details: see chapter for single devices

PDF CAD
www.aircom.net

Order example:
BP2U450-0401